

Construction Methods AND EQUIPMENT

FEBRUARY, 1961

PRICE \$1.00

A MCGRAW-HILL PUBLICATION



*Paving train
rounds
the bend
to spread and
finish
concrete on
Interstate 77.*

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2½-yard P&H shovel digs
rock on uneven footing . . .



OUR MAGNETORQUE-EQUIPPED P&H

"takes a 3½-ton bite every 15 seconds"

makes fast swing
and dumps load
into truck.



...FLOYD L. SOMERS CO., Medford, Oregon

Harlan E. Weaver, Superintendent, reports . . . "Moving rock like this is hard work, and our 2½-yard P&H crawler shovel has been doing it for the past 4 years. This machine has Magnetorque swing, which is the big reason we get a complete work cycle in 15 seconds . . . 40% faster than the shovel we used to use. This really adds up to top yardage at the end of the day."

Smoother, faster swings speed up operation. Floyd L. Somers has the contract to excavate, haul and supply the fill for the new bridge over the Siuslaw River near Florence, Oregon. Of prime importance to him is the speed with which he can excavate rock and load trucks for the haul to the dumping site. That's why Magnetorque is so important on his 2½-yard P&H shovel. It gives him faster, smoother swings with an average work cycle time of 15 seconds.

P&H shovel works on uneven ground. On this particular job, the P&H is forced to work on a 20-30% grade and swing while the tracks are on uneven footing, but even after operating under these conditions all day, there is no overheating of the Magnetorque swingers.

A. L. Mattson, Superintendent, says . . . "This P&H shovel is one of the most modern and easiest to operate machines I have seen. Magnetorque, hydraulic controls and air/hydraulic brakes give our operators perfect control at all times—enable them to get maximum production with minimum effort on their part."

For complete information on this job, write for Case History 129 or call your local P&H dealer.

HARNISCHFEGER

Milwaukee 46, Wisconsin

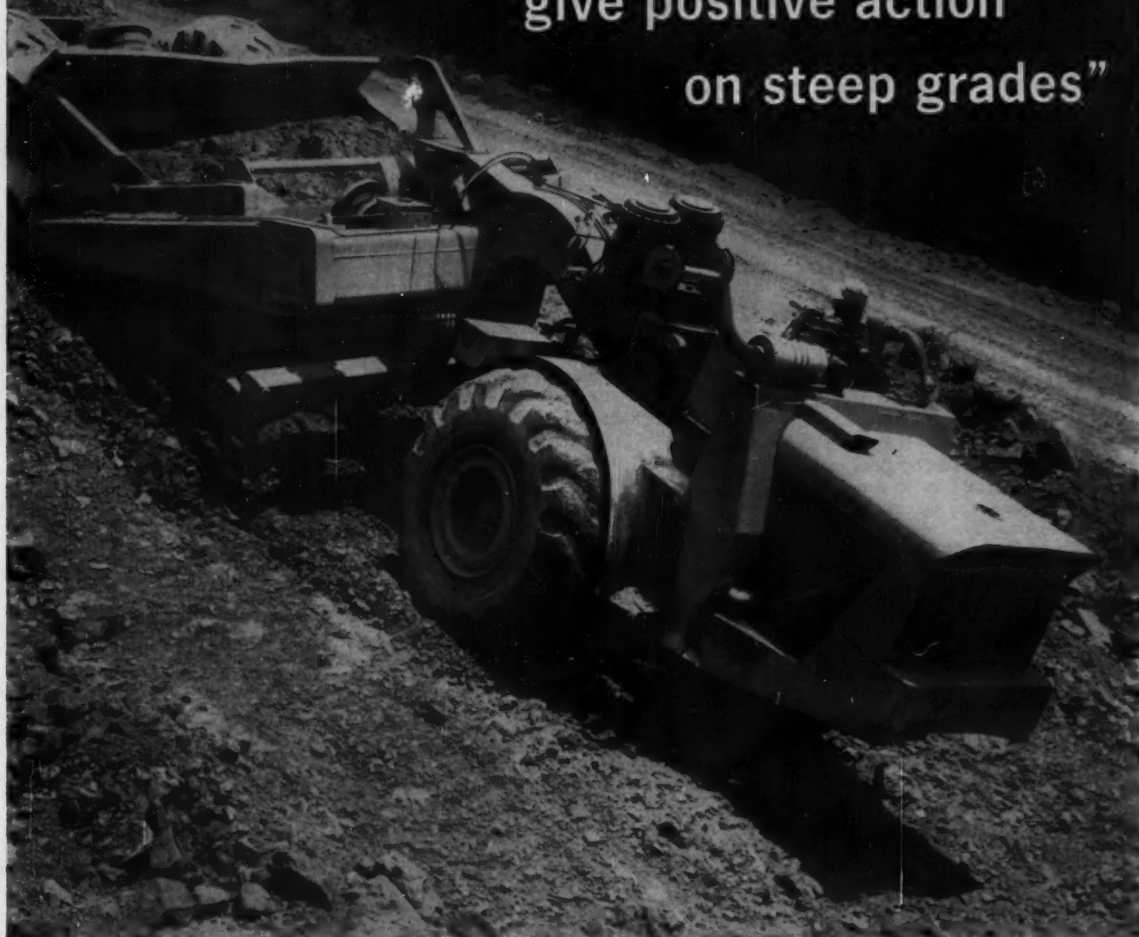


B.F. Goodrich

"Hi-Torque brakes

give positive action

on steep grades"



This Curtiss-Wright earthmover, equipped with B.F. Goodrich Hi-Torque brakes, is operated over rough West Virginia terrain where brakes must be applied frequently. The contractor reports "positive braking action on steep grades is the outstanding Hi-Torque feature." Gross weight on this vehicle is 52 tons, with payload varying from 44,000 to 50,000 pounds.

Hi-Torque brakes give heavyweight vehicles adequate safety and controllability—stop vehicles in approximately half the distance required for conventional two-shoe brakes. With this reserve braking power, cycle time can be reduced as equipment is operated in higher gear. Operators can tackle grades usually considered unsafe, since Hi-Torque brakes don't fade, will stop a fully loaded vehicle downhill!

Specify Hi-Torque brakes on your equipment—ask the vehicle manufacturer for details. Or write *B.F. Goodrich Aviation Products, a division of The B.F. Goodrich Company, Dept. CM-2, Troy, Ohio.*



Full circle contact with drum is provided by Hi-Torque brakes giving maximum effective braking surface in the same size unit. Hi-Torque stops vehicles twice as fast as conventional brakes.

B.F. Goodrich Hi-Torque brakes

Circle 1 on Reader Service Card

492 Ft. Culvert

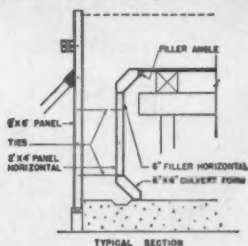


Symons Prefab Forms and Engineering Service

... Reduced by About 1/2
Material Needed for Job

How to extend an existing culvert 492 feet to allow Mercer Slough to pass under the new Seattle by-pass of U.S. Highway 99. Also, how to finish it before rains swell the slough, or creek, to over-flowing. That was the problem faced by A. R. Anderson Construction Company, Seattle.

Anderson used Symons Culvert Forms with Symons Steel-Ply Panels. Symons engineering and their Seattle man, Hal Caffee, designed a form lay-



out, so that inside wall and fillet forms could be stripped out without disturbing the shoring for the slab roof. This not only saved time but reduced by almost one-half, the material needed for the job.

The pay-off! It is estimated that it took under 200 man hours to set up and pour the job and under 60 man hours to strip the forms.

For the complete story on the *Seattle Culvert Job*, send in request on your company letterhead. Symons Steel-Ply Forms rented with purchase option.



SYMONS CLAMP & MFG. CO.
4255 Diversey Ave., Dept. B-1, Chicago 39, Ill.

Warehouses Thruout the U.S.A.

MORE SAVINGS FROM SYMONS

Circle 2 on Reader Service Card

Construction Methods AND Equipment

FEBRUARY, 1961

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CONSTRUCTION METHODS



***Gradall
keeps busy all
winter...***

IN WINTER, Gradall cleans ice out of ditches quickly and cheaply.



***...and all
summer, too!***

IN SUMMER, Gradall recuts, slopes and "hand finishes" ditches fast at low cost.

WARNER & SWASEY
Gradall®
CLEVELAND 3, OHIO



*World's largest line of hydraulic
construction and excavating equipment.*

Circle 3 on Reader Service Card



ON THE COVER

Great Lakes Construction Co., with headquarters in Cleveland, Ohio, paves 90,000 sq yd of divided highway with transit-mixed concrete. Challenge mixers on International trucks deposit their 6-yd loads ahead of a Blaw-Knox spreader, which is followed by a Flex-Plane finisher and Koehring longitudinal float. When completed, the highway will stretch from Great Lakes' home town to Charlotte, N.C.

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NEXT MONTH

After winning a \$10.5-million contract for paving at Washington's Dulles International Airport, Western Contracting Co. assembled a high-production crushing plant from small units previously scattered all over the country. Mounted on frames built to the dimensions of a basic module, the relatively small components combine to form a big-capacity plant capable of breaking up a large-scale apron paving operation.

Photo Credits—62 (middle) Associated Press, 82, 83, 84, Bureau of Reclamation.

FEBRUARY, 1961

Pay Dirt in This Issue

How Zachry Moves

Earth—Texas Style 82

Working a fleet of big bottom dumps and scrapers on two 10-hr shifts, the San Antonio contractor is hauling an average of 50,000 yd of material a day to form a 21,000,000-yd earthfill dam.



Jet Runway Gets

A Novel Face-Lifting 92

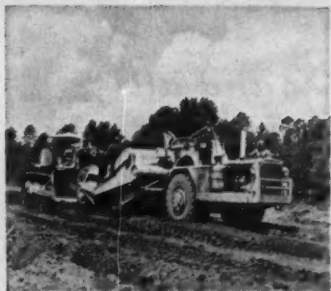
New methods had to be developed to bond a 2-in. thick concrete overlay to a worn out runway. Before paving, the contractor had to sandblast the old surface and then etch it with acid.



Specialized Spreads

Work Wet Borrow Pits . . 124

Two scraper fleets are working night and day to build a roadbed through a South Carolina swamp. To get 6,500,000 yd of fill, the contractor must open up a total of 65 pits along the job site.



Melting Ice Decenters Trussed Arch Forms 85

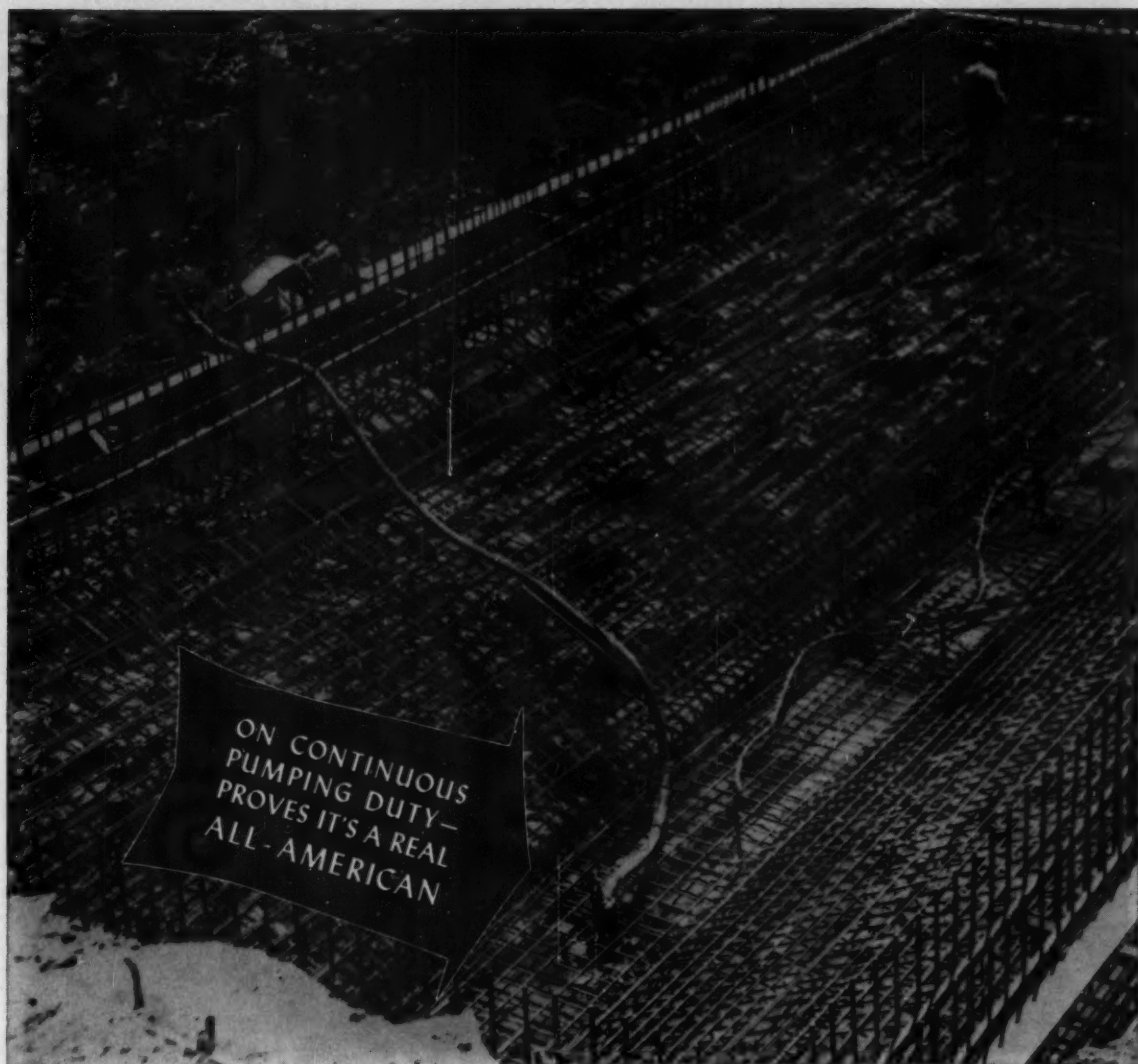
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EARTH COMPACTION—Final chapter of series 139



Gorman-Rupp's new Submersible



5 hp motor: single-phase 230 volt, 3-phase 220 volt, or 3-phase 440 volt. Capacity range from 300 gpm at 10' tdh to 10 gpm at 120' tdh.

Model 3VSI is the *first* All-American-designed-and-produced submersible dewatering pump. There's no mystery about it in techniques or tools. Like all Gorman-Rupp pumps, it's simple in design and rugged on the job. Has only one moving part and three wearing surfaces, made of special materials to stand up against sand-and-water mixtures. Can stay under water or pump itself dry and run that way for long periods without damage. Easily serviced by regular personnel with common tools.

And—it's an All-American in performance. On the job above, the 3VSI was in continuous service pumping water out of an excavation for a sewerage treatment plant at North Madison, Ohio (Wm. Passalacqua Bldrs. Inc.). Working against a static head of 40', and with 150' of 3" discharge hose, the pump kept the excavation dry and the work on schedule.

Here's the pump you've needed—the one that meets modern construction requirements. See your Gorman-Rupp distributor, or write us direct.

THE GORMAN-RUPP COMPANY

305 Bowman Street

Mansfield, Ohio

Gorman-Rupp of Canada Limited, St. Thomas, Ontario

Circle 5 on Reader Service Card

2800

HOW PARLON® COMPOUNDS INCREASE CONCRETE PERFORMANCE



Eliminate Hydration Problems

Parlon treating compounds seal the surface, retain the moisture, for complete reaction and maximum strength.

Offer Immediate Rainfall Protection

Parlon compounds provide rainfall protection within ½ hour after application, developing sufficient hardness and film integrity to keep the fresh concrete from being washed away.

Seal From Within For Long Periods

Parlon solutions are applied at very low solids, penetrate the surface structure of the concrete, and develop an integral seal.

Resist Alkali Damage

Only Parlon chlorinated rubber used with chlorinated resins or other special alkali-proof resins, will withstand alkali indefinitely and thus allow an immediate, permanent bond of adhesives or paint films to the concrete surface.

Eliminate Waxy Film

Where treating compounds are now being used, money savings can result from surface treatment with these Parlon-based products. The Parlon film enables the concrete to cure to a strong slab and sandblasting before applications of paints or joint sealants is not necessary.

Treating compounds based on Parlon, chlorinated rubber made by Hercules, are now available from a number of manufacturers. Ask your regular supplier, or write us.

Cellulose Products Department

HERCULES POWDER COMPANY

INCORPORATED

Hercules Tower, 910 Market St., Wilmington 99, Delaware



CR61-1

Circle 6 on Reader Service Card ▲

Circle 7 on Reader Service Card ►
CONSTRUCTION METHODS



**THE
TOUGHEST
SHOVELS
BUILT...**

...and the SMOOTHEST!

ANY shovel can dig *dirt*! But what is your output going to be in a job like this? Your Northwest is a *real* Rock Shovel. It's been proved over and over again. Begin with the foundation—Machinery Bases of alloy cast steel with cast steel machinery side frames—massive—capable of amply withstanding the wracking, twisting strains of rock digging—a base that frees you from periodic rebuilding.

Get on a Northwest! Get the feel of the controls. Feel that crowd take ahold. Find out what it means to watch that dipper bite up through in one smooth cut. Here is a combination—the Feather-Touch Clutch Control that brings ease of operation with the Northwest Dual Independent Crowd—a combination that brings a smoothness of maneuverability in handling the dipper the like of which you have never experienced before.

The Northwest Dual Independent Crowd utilizes force most independent crowd shovels waste. The Cushion Clutch eliminates shock overloads on operating machinery, Northwest design assures easier upkeep. These are just part of the many advantages that Northwest brings you for high output in rock work. They mean savings in time! They make money and assure your ability to take care of the unexpected. They combine to make the Northwest the finest machine of its kind.

Make your next machine a *real* Rock Shovel—a Northwest.

NORTHWEST ENGINEERING COMPANY

1503 Field Building, 135 South La Salle Street, Chicago 3, Illinois



"THEY'RE
You can say... ALWAYS READY
TO GO!"

CRANES
SHOVELS
DRAGLINES
PULLSHOVELS
TRUCK CRANES

3/4 to 3 Cu. Yd.
Capacity

NORTHWEST

It's time to get hard-boiled about your air-power costs! Look how you can slash through this whole area of your operations for "man-sized" savings . . . when you standardize with Task Forces of

SCHRAMM

CO-ORDINATED AIR POWER

Gone are the days when contractors can afford to look at the performance and costs of units of air-powered equipment one by one! A new compressor here. An old compressor there. A wagon drill and compressor down the road.

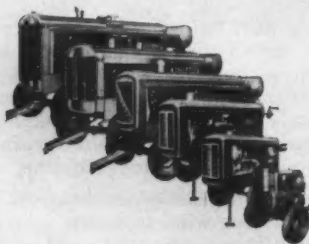
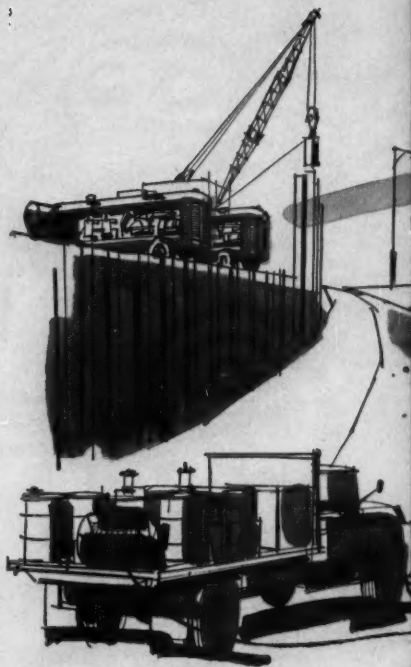
Today, you must take a hard-boiled look at your total air-power picture . . . all the profit leaks and losses, all the waste and inefficiencies . . . that you can plug when you consider your air power as a co-ordinated package.

Reason? All SCHRAMM equipment is designed to fit together, work together . . . give you maximum savings in initial costs, operating costs, maintenance costs. The same basic engines and compressors are used throughout the line for maximum interchangeability of parts between engine and compressor, between products, between sizes. Mass production of these parts lowers costs . . . both initial and maintenance. Plus . . . maintenance "Insurance Kits" contain critical parts for all equipment, save time, costs! Any engine mechanic can service.

Write today for your Co-ordinated Air Power Booklet. SCHRAMM, Inc., 604 North Garfield Ave., West Chester, Pa.

SCHRAMM

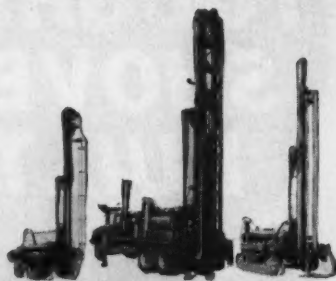
CO-ORDINATED AIR POWER



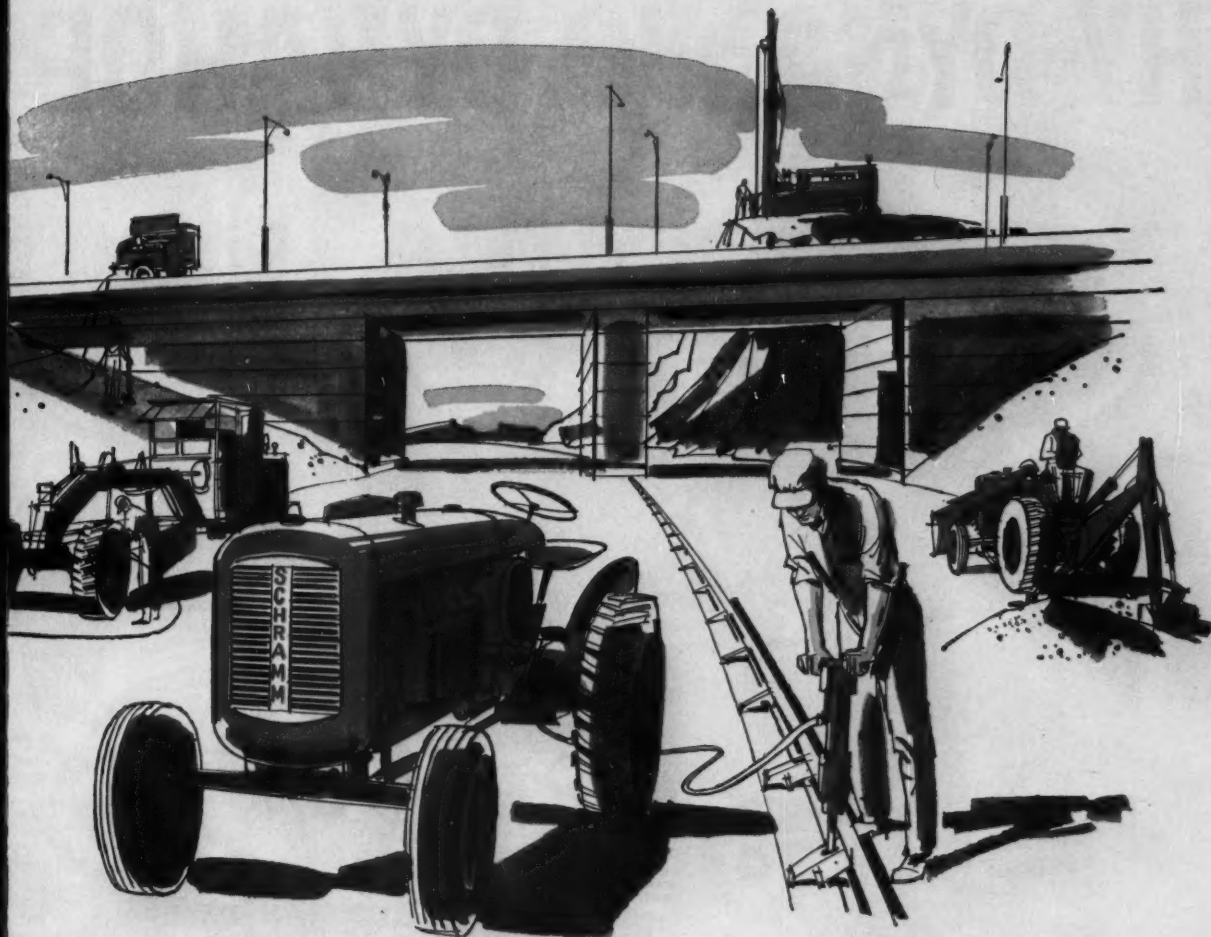
Portable Compressors save you up to 35% initial cost on 125 cfm compressors, comparable savings on every size from 20 cfm to 600. You also save 15 to 50% fuel consumption . . . get more air per unit of fuel. Air is hotter, you get more work per foot of air . . . tools operate at full capacity. Others use 40 gal. of oil in cooling air . . . SCHRAMM uses none!



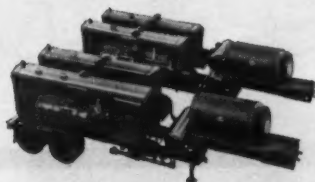
Pneumatractor Self-propelled Compressors cost less than comparable compressors and tractors combined! PNEUMATRACTORS drive along with work. No trucks, crews tied up. With STANDARD or MODEL 250 PNEUMATRACTOR, one man can break out concrete, tamp, drill, any job with air. With HEAVY PNEUMATRACTOR, same man can dig, grade, fill.



Rotadrill Rotary Drill Rigs cost less too. With extra savings on PNEUMATRACTOR ROTADRILL that has built-in compressor to replace separate crawler drill and compressor. Costs less, does same job as crawlers that use 315 or 600 cfm compressors. On ROTADRILLS, one man can do drilling job, change steels, drive from hole to hole.



Hi-Pressure Compressors are exclusive with **SCHRAMM**! Vital for jobs which require higher than normal pressures, such as testing small-diameter pipe lines. Units are dual purpose—can be used at normal pressures for regular work or at high pressures: 60 cfm at 500 psi; 200 cfm at 250 psi; 400 cfm at 250 psi!



Booster Compressors are the ideal package for the high-pressure, high-capacity air jobs such as major pipeline testing. Road-trailer model, shown, produces 1800 cfm at pressures up to 275 psi, or 900 cfm at pressures up to 500 psi. Other models, capacities available. As with all **SCHRAMM** equipment, buy or rent!



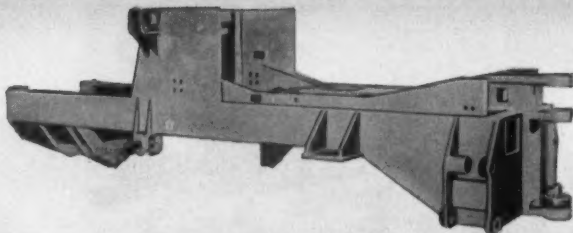
Construction Tools are mass produced to offer low initial cost for rock drills, breakers, clay spades, tampers and others. Combined with **SCHRAMM** Compressors, you get more air at the tool. More work is done. They provide faster operating speeds, lower up-keep costs, lower air consumption.

From this complete line of Co-ordinated Air-Power equipment, there's an air-power package just suited for you. Investigate today!

HY-DYNAMIC DYNAHOE®



Massive Foundation Frame:
Only this design can provide the stamina and strength so vital to successful heavy duty trenching, loading and back filling performance.



Unit Construction: The complete Loader-Tractor-Backhoe is built as ONE INTEGRATED UNIT... differing completely from machines consisting of a standard tractor to which Loader and Backhoe attachments have been added.

New Operating Advantages: Extremely easy to handle... unusual visibility for both Backhoe and Loader operations. Operator's seat quickly pivots to either Loader or Backhoe controls.

Extremely Heavy-Duty Construction: All major component parts, such as frame, buckets, booms, dipper, etc., are exceedingly heavy and expertly welded structures.

Good Traction: Maximum tire flotation is provided in BOTH front and rear axles.

Oversize Pins: Every pin is oversize... for greatest strength and wear. All bushings are of special hard bronze compound... Zerk fitting lubricated.

Fast Swinging and Digging: Adequate hydraulic power guarantees especially fast Backhoe boom swinging and digging action.

Adequate Cooling: Oversize radiator, fan and hydraulic oil coolers prevent overheating under all conditions.

Exclusive Design: The only machine engineered as a single, completely integrated Loader-Tractor-Backhoe unit.

Power Steering: Easier to drive on the road and to operate in the field. Adequate weight on steering wheels for 18 to 20 m.p.h. highway travel.

Transmission: Torque converter and power shift forward and reverse provides easier, faster operation for all backfilling and loading jobs.

Longer Lasting Buckets: Oversize and extra heavy construction. Bucket teeth with replaceable caps on Backhoe.

Weight Distribution: The unit has been designed with proper weight distribution on both rear and steering axles to provide the best flotation, operating and best highway driving characteristics.

ENTERS FIELD



"'DYNAHOE' is Tremendous!"

This new "backhoe-loader" has proved so completely different and better than anything we've ever seen that it's hard to believe. In six months of steady operation we have no problems whatsoever, have increased our output by 50%, find no job too tough to handle."

Emmett Lange, FOREMAN,
ILLINOIS HYDRAULIC CONSTRUCTION CO.,
ELGIN, ILLINOIS

For complete information on the New "DYNAHOE" write or call:

Engine—244 cu. in. Displacement, 65 HP @ 2400 RPM . . . **Electrical System**—12 volts . . . **Fuel Capacity**—18 gallons . . . **Cooling System**—20 quarts . . . **Torque Converter**—2 to 1 multiplication . . . **Transmission**—Power Shift Forward & Reverse, Manual Range—3 speed, 5 to 20 m.p.h. in either direction . . . **Axle Rear**—Heavy Duty Planetary . . . **Brake System**—Hydraulic, individual on each rear wheel. Hand operated parking brake . . . **Tires**—Front 9:00 x 16—8 ply, Rear 14.9 x 24—8 ply . . . **Hydraulics**—Sealed System . . . 11 gal.—Steering . . . 31 gal.—Backhoe & Loader . . . **Valves**—6 spool for Backhoe, 2 spool for Loader, Relief Valve to control entire hydraulic circuit . . . **Rams**—All cylinders are double acting, except swing cylinders. Piston rods are extra heavy and chrome plated. Cylinder walls are extra heavy, honed, ground and polished. Extra heavy duty piston packing; extra long packing glands . . . **Loader**—Bucket 72"— $\frac{3}{4}$ yd. Struck, Lift—3,000 lbs. to full height, Breakout force—ground level 6,000 lbs. . . **Backhoe**—Bucket—24" (std)—7.5 cu. ft., 18", 30" and 36" buckets available . . . **Weight**—Front 3,200 lbs., Rear 8,800 . . . Total 12,000

Specifications subject to change.



MANUFACTURED BY

THE HY-DYNAMIC CO.

417 SKOKIE HIGHWAY

LAKE BLUFF, ILLINOIS

CEdar 4-5400



Circle 11 on Reader Service Card



Kaser's Barber-Greene 828 Stabilization Plant is shown in a quarry near Dexter, Ia. The 828 hydraulically erects itself in just two minutes after being towed to the job site. Heavy duty

Barber-Greene portable conveyor and special 36" reciprocating feeder and trap complete the installation.

STABILIZATION MIXER ERECTS TWO MINUTES, TOPS

Barber-Greene self-erecting, portable plant gives Iowan low cost output; his two Barber-Greene asphalt plants combine to produce 1,000,000 tons of hot mix.

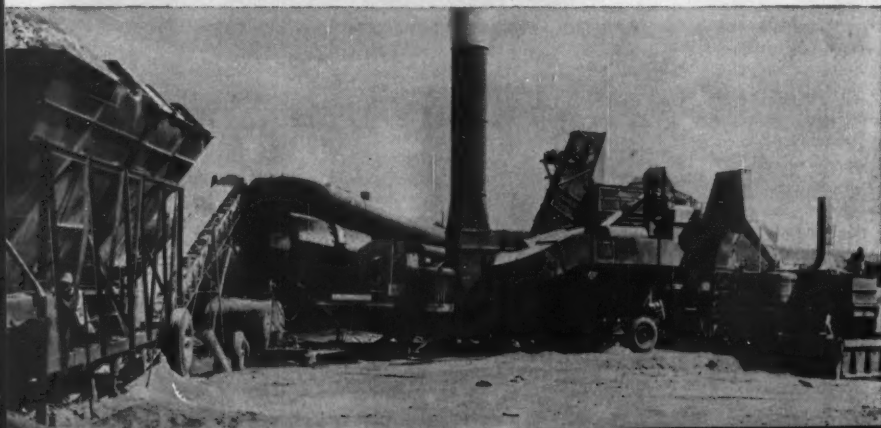
Don Kaser of Des Moines wears two hats: 1) spokesman for high type asphalt paving as a founder and past president of the Iowa Asphalt Paving Assn.; and 2) producer of high type asphalt paving and base mixes as head of Kaser Construction Co.

He's a user of Barber-Greene asphalt paving equipment since 1954 when he bought his first 848 Continuous Mix asphalt plant. Two years

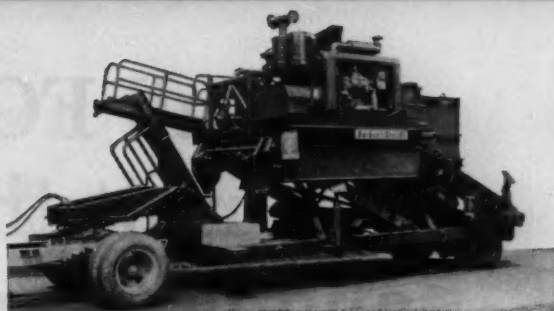
later he added a second 848 plant. Since that time these plants have combined to produce 1,000,000 tons of high quality, low cost mix.

Kaser Construction purchased their new Barber-Greene Model 828 Self-Erecting, Portable Stabilization Plant in 1959, and Don Kaser reports, "production was 130,000 tons the first year and we expect to mix 200,000 tons this year.

"We average 500 tph, but top 600 tph during peak periods. The 828 gives us control to meet specs easily and capacity to keep up with as many trucks as the contractor can provide. These features plus 2-minute hydraulic plant erection and complete portability let us handle jobs more economically than when we mixed and spread



This 848 Barber-Greene Continuous Mix plant is producing Hot Mix Type A for the Kaser firm on a \$1,000,000 contract at New Sharon, Ia. Both plants operate at a peak of 250 tph and require an average of four days to move — smoke to smoke.



Model 828 Self-Erecting Stabilization Mixer shown in travel position.

IN 600 TPH

on the road bed with a grader. Now we get far better accuracy by central plant mixing, hauling to the site and putting in place with a spreader."

Full Stabilization Plant Line — This self-erecting Model 828 is but one of four units in Barber-Greene's No. 1 stabilization plant line that offers a production range from 200 to more than 600 tph. The big 828 is also available in portable and stationary models. The smaller Model 824 produces from 80 to over 200 tph. All models are backed by unmatched experience in continuous material handling and control—your assurance of highest tonnage at lowest cost. See your Barber-Greene Distributor for the plant and the conveyor matched to your needs.



EXCLUSIVE PUGMILL FEATURES

Material forms its own mixing chamber in pugmill, eliminating need for liner plates. Centrifugal water pump and precision water meter assure water content needed for proper compaction.

Twin shaft pugmill gives fast, thorough mixing. Hydraulically operated clamshell gate opens across full width of surge hopper, prevents segregation in discharging, allows operation between trucks. Enclosed gear box runs in oil bath. Paddle tips and paddle arms are reversible and replaceable. Diesel or electric power available.



Only Barber-Greene offers four different finishers plus a Road Widener-Shoulder Paver—equipment sized for all your needs.

World's No. 1 Manufacturer of Asphalt Paving Equipment

Representatives in Principal Cities of the World

Barber-Greene

Main Office and Plant AURORA, ILLINOIS, U. S. A.
Plants in DeKalb, Illinois, Detroit, Canada, England, Brazil, Australia



CONVEYORS • LOADERS • DITCHERS • ASPHALT PAVING EQUIPMENT

Circle 13 on Reader Service Card

"Call FOSTER . . . rent the piling and get savings PLUS"



One sure way to cut costs on your next steel-sheet piling job is to use Foster's Piling Rental Plan. You get savings *plus* the assurance of all the piling you need, when you need it!

Foster's nationwide warehouses and field stocking points carry all standard sections — plus corners, crosses and tees — plus hammers, extractors and other driving accessories — all available for immediate shipment.

Ask for the exact sections, the exact lengths the job requires. All you pay is one low fixed rental rate. No more hazardous and costly driving with substitute "make do" sections; no more tying up cash in big piling inventories.

For all types of piling, for complete stocks of highway and construction products, call the Foster specialist near you. Write **L. B. FOSTER CO.** for Piling Catalog CM-2, Pittsburgh 30, New York 7, Chicago 4, Houston 2, Los Angeles 5, Atlanta 8, Cleveland 35.



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Rental Steel-Sheet Piling • Pipe Pile • H-Pile • Lightweight Piling • Pipe • Rail

Circle 14 on Reader Service Card

Construction News From Washington

Washington, D.C.
February, 1961

More Money for Federal Construction

Construction can count on a boost in federal spending for the fiscal year that begins July 1. A minimum increase of \$430 million in construction outlays is forecast by the Eisenhower economy budget for fiscal 1962. His tightly drawn budget asked for a record \$7.9 billion of federal construction expenditures in the coming year.

The estimates make no allowance for new and expanded programs advocated by the Kennedy administration. And many of these are likely to be approved in the current session of Congress. They include building programs for depressed areas, schools and colleges, urban development, highways, housing, pollution control and the development of natural resources.

These additions would increase spending requirements only moderately in Kennedy's first year. Their major effect in fiscal 1962 would be to expand the number of contract awards without creating a tremendous increase in the overall Eisenhower estimate.

Anti-recession measures, of course, would have a more immediate effect. Pump-priming with the help of public works, sure to be considered if the business slump deepens in the next two months, would call for a quick flow of cash into construction jobs. Such programs would appreciably increase the government's construction outlays in fiscal 1962.

Ike's Budget Allows New Starts

For the second year in a row, the Eisenhower budget recommends new starts for projects sponsored by the Army Engineers and the Bureau of Reclamation. An initial \$21 million of appropriations is proposed to pay first-year costs of starting 36 projects that will require an estimated \$440 million to complete.

There are 31 new projects in the Corps of Engineers list and these seven are worth more than \$15 million each: The \$60 million Belleville Locks and Dam on the Ohio River (Ohio and W. Va.); the \$43.8-million Fishtrap Reservoir (Ky.); the \$33.7-million Holt Lock and Dam (Ala.); the \$23-million Stillhouse Hollow—formerly Lampasas—Reservoir (Tex.); the \$22.5 million Curwensville Reservoir (Pa.); the \$17.1-million Salamonie Reservoir (Ind.), and the \$16-million Turtle Creek flood-protection project (Pa.).

Of Reclamation's five new starts, three top \$15 million in cost. The largest is the \$95.3-million Canadian River project in Texas, followed by two projects of more than \$18 million each for the city of Norman, Okla., and the Cheney Div. of the Wichita Basin irrigation scheme in Kansas.

Congress, if it follows past practice, will add to the list of new starts without increasing budgeted appropriations for the two agencies. The budget asks \$932 million for the civil works activities of the Corps and \$290 million for Reclamation. Construction outlays for the two programs are expected to total \$975 million.

continued on next page

Highway Spending Will Increase

Budgeted spending for federal-aid highways allows nearly \$3 billion in payments to the states during fiscal 1962. In the same year, the Bureau of Public Roads expects to approve 8,550 projects for construction. Total cost of these projects would be about \$4.4 billion, including \$3.3 billion of federal funds.

Federal highway spending will grow bigger under the Kennedy administration. As a starter, federal-aid roads can count on nearly \$100 million more in 1962 than the Eisenhower figures indicate. Money available for federal-aid construction will increase by that amount when Congress again ignores Eisenhower demands that it has rejected before. Any Congressional action this year will accelerate highway construction rather than slow it down.

Military Construction to Decline

Construction for the Armed Services continues at a gradual decline in fiscal 1962. The Pentagon budget estimates spending at \$1.3 billion, down about \$40 million from the current rate and \$300 million less than for fiscal 1960.

New contract awards will show a steeper drop. New military construction starts are expected to decline \$168 million to \$1.2 billion in fiscal 1962.

Public Building Programs Grows

The 1962 budget recommends funds for the General Services Administration to start construction of 20 new federal buildings, which will cost \$208 million to complete, in various cities throughout the country. GSA construction spending for the year is estimated at \$200 million, up \$58 million from fiscal 1961. New money for construction in the GSA appropriation request also goes up \$28 to \$238 million.

Still Seek Answer to Missile Strikes

Top officials of the government, the building trades, and contractors' association still are maneuvering to find some answer to the steady trickle of jurisdictional strikes at missile bases.

The Air Force got almost nowhere in its attempt to add a contract cancellation clause to enforce a requirement that contractors abide by the joint board decisions on jurisdictional disputes. Now the building trades leaders again are taking up the idea of a no-strike pledge—one that assures union officials that they will not lose construction jobs to other trades.

The hope is that some arrangement can be worked out without creating any new settlement machinery. Among the ideas already suggested is a new board that would hear appeals from the decisions of the joint board on jurisdictional questions.

While negotiations have been underway, the Army engineers report that jurisdictional dispute stoppages have decreased about 60% since last spring.

NOW...THE COMPACT INVADES THE CRANE- EXCAVATOR FIELD!



NEW BANTAM COMPACT 250

**LIFTS 5 TONS! LOW PRICE
SIMPLIFIED DESIGN
WIDE WORK RANGE**



NOW... 2 Bantam money



TRENCHING



CRANE WORK



GENERAL EXCAVATING



CUSTOM WORK



MATERIALS HANDLING



HEAVY-DUTY BANTAM 350 SERIES...

AND ALL-NEW

The BANTAM Compact 250 is a new concept in a versatile digging-lifting machine combining cable-hydraulic operations. It's *priced* so you can move up to this more profitable type rig. It's *sized* so you no longer have to buy more capacity than your jobs call for.

MODERN, SIMPLIFIED DESIGN—

The BANTAM Compact 250 brings new design benefits to the low-priced equipment field. It's simpler with cable operation of *all* drums and all machinery on a single shaft. It has rapid 370° full-hydraulic swing. It's easy to operate with BANTAM's famed mechanical controls providing perfect "feel" of the work all the time. BANTAM Compact 250 is the last word in efficiency!

LOW FIRST COST, LOW OPERATING COST—

This is it—today's *genuine* truck crane-excavator in the low-price field. You're big money ahead when you buy the Compact 250... and you multiply your saving on every job. High-speed operation and remarkably low maintenance and operation costs make the Compact 250 the fastest, steadiest earning machine its size you can have.

MORE PROFIT POTENTIAL—

The BANTAM Compact 250 is the perfect answer for hundreds of smaller jobs involving frequent moves. It brings maximum digging-lifting capabilities in the compact class... opens up wide new job versatility with full cable-machine flexibility. Buy it on BANTAM's own, high-mobility 4 x 4 carrier—or mount on your own truck. Either way, you're on your way to greater profits.

BACK HOE—either cable or hydraulically controlled bucket. True backhoe operation *and* advantages. You can: dig 100' of 5' trench per hour; excavate to 12'11" ... reach to 21'3" ... dump at 12'10" clearance. Buckets 20" to 30".

DRAGLINE—now handle all those profitable dirt jobs with a small, low-cost machine. Up to 85 yards per hour with this BANTAM-built attachment.

CLAMSHELL—another BANTAM Compact 250 work advantage: BANTAM clamshell bucket handles 50-60 yards hourly, easily.

SHOVEL—for fast bank-excavating and stockpile work. Up to 90 yards every hour out of stockpile, top production on any job.

CRANE—now, for all those lifts up to 5 tons where it's uneconomical to send bigger, more expensive rigs, the BANTAM Compact 250 is the sensible answer! High-stability performance, precision handling, perfect visibility!

BANTAM QUALITY, OF COURSE!

Here is the built-in profit assurance of quality that is typically BANTAM—for a steady, high return on your investment. Get the bonus values of BANTAM's extra care in manufacturing... the finest materials... most modern assembly methods... the added quality throughout.

see why the NEW BANTAM COMPACT 250 belongs in your plans... **NOW!**

makers to choose from:

BANTAM COMPACT 250!



MOUNTS ON NEW BANTAM CARRIER — OR YOUR OWN TRUCK!

Get the unmatched mobility plus maximum off-highway workability with this all-new economy-priced Bantam-built 4 x 4 carrier. It's a genuine crane-excavator carrier—built for the lifting-digging job, not adapted for it!

Schild Bantam is America's only manufacturer in its class which builds its own complete line of carriers strictly for the job requirements. Bantam Model 54 Carrier is easy to drive, offers greatest stability in crane and excavating work.

Or, if you prefer, mount your new Bantam Compact 250 on your own 4 x 2 or 4 x 4 truck, new or used.



Bantam Model 54 Carrier with optional cab includes door and right-side window panel.

221 Park Street, Waverly, Iowa



SCHILD Bantam Co.

WORLD'S LARGEST PRODUCER OF TRUCK, CRANE, EXCAVATORS



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FOR COMPLETE DETAILS:

Circle 19 on Reader Service Card

Schild Bantam Company, 221 Park St., Waverly, Iowa

Send catalog on new Bantam Compact 250, ☐ Also literature on Bantam 300 models

Name.....

Company.....

Address.....

City..... Zone..... State.....

CM308



CHEVROLET **IFS** **"WALKS" WHEELS OVER**
FRONT INDEPENDENT SUSPENSION **TRUCK-BUSTING BUMPS!**

Chevrolet truck wheel action on rough road surface, as depicted by 4-stage stop action photography.

CHEVROLET **I.F.S.** FRONT INDEPENDENT SUSPENSION PROTECTS YOUR PROFITS THESE THREE WAYS:

1 *Rides down high maintenance costs.* When a bump looms up, Chevy's independently suspended front wheels "walk" right over it. Most road shocks and jolts never reach the chassis, cab or body. The truck rides *smoothly*, takes less of a beating, stays in cost-saving shape longer. Your income doesn't dribble away in big repair bills. And you don't lose money through excessive downtime, either.

2 *Rides cargoes over rough spots with less damage . . . minimum loss.* Thanks to those same "walking wheels," loads don't do much bouncing in the body of a '61 Chevy truck. That means you don't have to contend with undue cargo damage that eats away at your earnings. (Chevy's load-tailored *rear* suspension helps protect cargoes, too.) This sure protection for fragile loads—and profits—is standard in 1961 Chevrolet trucks of every weight class.

3 *Rides drivers through with less fatigue—for tighter schedules.* Wait till you see how Chevy front wheel action works to eliminate tiring shimmy and steering-wheel fight. It means that the man at the controls can stay there longer with less fatigue—stay on schedule and do a bigger day's work. (Another reason you can look for faster schedules is that Chevy's bump-beating wheel action allows faster safe speeds on rough roads.)

That gives you an idea of how Chevy Independent Front Suspension works to move you ahead in the money-making department. And it's available in 165 Chevrolet models for '61, from new Corvair 95's to 36,000-lb. GVW tandems. Check it out with a demonstration ride at your Chevrolet dealer's, sometime soon. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

INDEPENDENT FRONT SUSPENSION



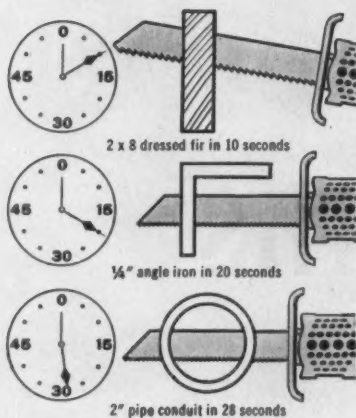
In Chevy, each front wheel, suspended independently, is free to step cleanly over bumps (see left). Each works smoothly to reduce objectionable jolts so characteristic with I-beam axle design (right). Working with load-tailored rear suspensions in every weight class, I.F.S. provides the basis for profit-protecting performance that's unmatched by I-beam axle trucks.

I-BEAM AXLE DESIGN



1961 CHEVROLET STURDI-BILT TRUCKS

New B&D Sabre Saw cuts through all material in less time ...with spunk to spare



Wood and metal turn to butter faster ... with the new B&D power-packed Sabre Saw. Tests prove it cuts through 2x8 dressed fir, 1/4-inch angle iron and 2-inch pipe conduit all in less than a minute ... almost twice as fast as any saw its size! Greater power, new long-stroke action (cutting surface is over 1") make the difference, put more teeth into every job (assure less blade wear).

Wider range of blades, too ... for all-purpose performance

Choose from a complete new line of Sabre Saw blades—double-edged for pockets and scrolls, single-edged for any job. They fit all other leading saws, too ... make them cut faster. Buy the new B&D Sabre Saw with five all-purpose blades at leading distributors everywhere.



Black & Decker

CUTS MAN-HOURS TO MINUTES

THE BLACK & DECKER MFG. Co.
Dept. 2202, Towson 4, Maryland
(In Canada: Brockville, Ont.)

- ☐ Please arrange a demonstration of B&D Sabre Saw.
☐ Please send additional information on B&D Sabre Saw.

Name.....Title.....

Company.....

Address.....

City.....Zone.....State.....

Circle 22 on Reader Service Card

Job Talk...



Contractor-Built Gage Shows Depth of Cut

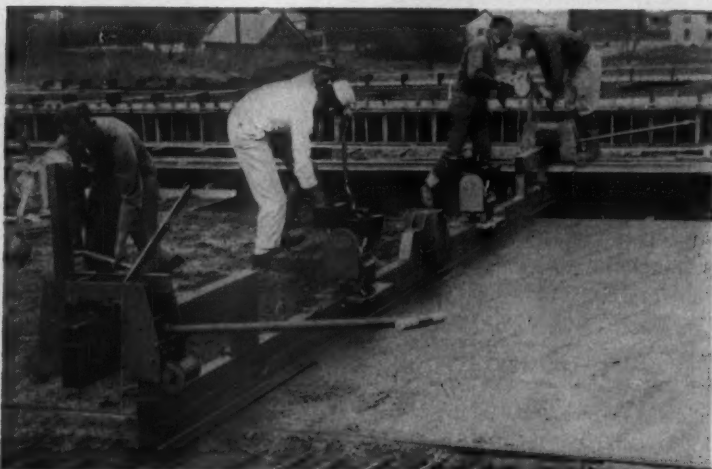
A home-made gage installed on the bucket of a front-end loader eliminates neck-craning by the operator while fine grading. A pair of metal arrowheads mounted at the rear of the bucket tell him when the rig is cutting at proper depth.

A Cleveland contractor devised the gage for an Oliver OC-4 tractor with a Ware bucket. Made

of odd parts that cost about \$7.50, the gage consists of an 8-in.-long actuating arm, a turnbuckle, and two arrowheads—one fixed and one movable.

The actuating arm is mounted on a bolt welded to the frame at the rear of the bucket. It pivots about this bolt when the operator tilts the bucket and rides up or down on a guide pin welded to the lower control arm holding the bucket. The turnbuckle transmits this movement to an arrowhead, which rotates around a bolt on the rear of the bucket.

To set the gage for fine grading, the operator first lowers the entire bucket assembly to approximate the desired finished grade. Then he tilts the bucket so that the cutting edge is right on the money. Finally, he adjusts the turnbuckle so that the two arrows are pointing directly at each other. From then on, he can set the bucket at grade level by lining up arrowheads.



Screed With Two Flanges Speeds Concreting

A double-flanged steel screed that comes close to doubling the strike-off action of a standard unit is speeding construction of concrete bridge decks for Brunalli Construction Co. The Connecticut contractor is using the new screed on 24 bridges along a section of Route 17 near Windsor, N.Y.

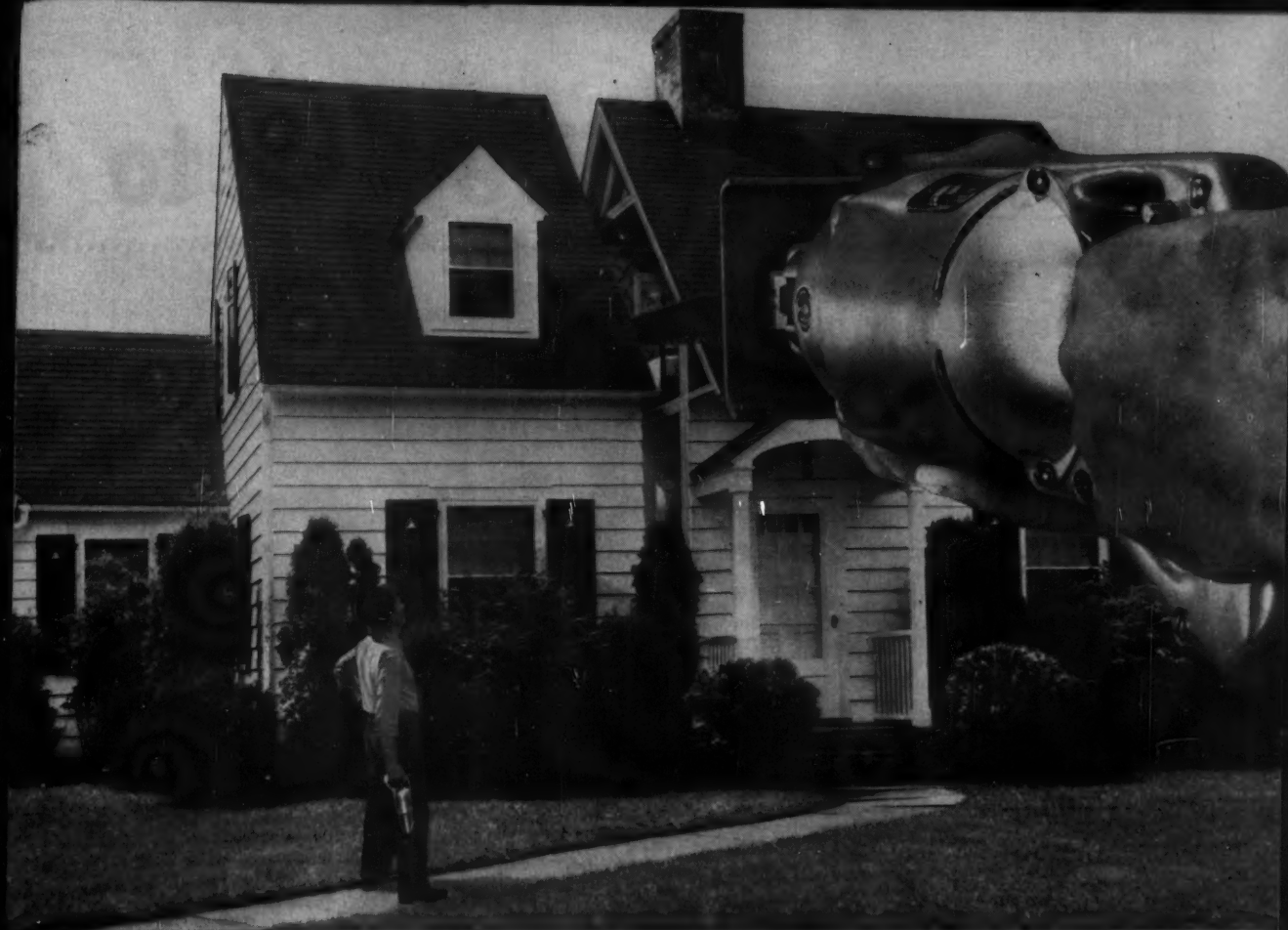
The screed, fabricated by Stow Manufacturing Co., consists of a steel beam equipped with two 3-hp vibrators. The assembly is mounted on lift-up rollers. The

beam, actually a rectangular steel tube, has two 3-in. angles mounted at the bottom to serve as twin strike-off bars. Brunalli is using either a 22 or 28-ft long beam, depending on job conditions.

Another feature of the screed is an adjustable hinge assembly that allows the contractor to set a crown as high as 3 in. The angles attached to the bottom of the beam also can be raised or lowered at various points. On this

continued on page 27

CONSTRUCTION METHODS



The saw that could cut a house in half!

New B&D Sabre Saw with longer cut goes through wood, metal, plaster

It stops at nothing! The new Black & Decker Sabre Saw power-cuts clean through wood and plaster, metal pipe and sheet . . . all as easy as you please with exclusive long-stroke action. Unique rock 'n' lock shoe design makes your work easier yet. Blade spindle turns 90° and 180° to cut in any corner, cut out any pocket. You grip right behind the safeguard blade guide

for up-front control. You'll find the Sabre Saw's vibration is the lowest ever . . . its balance perfect for the most accurate cutting. Just try the new B&D Sabre Saw one time . . . and you'll see how it *could* cut a building in two, any time. For sales and service, look in the *Yellow Pages* of the telephone book under



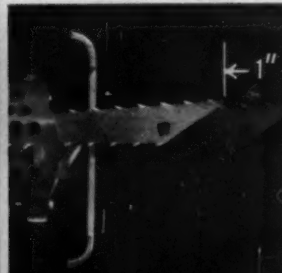
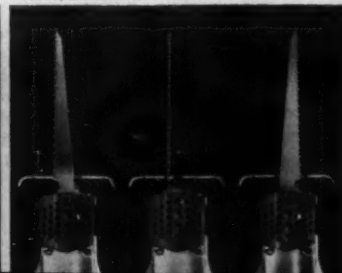
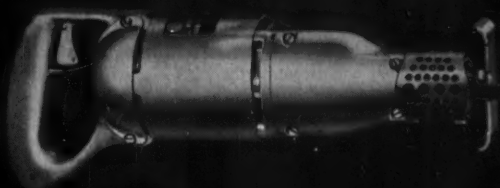
Black & Decker®

CUTS MAN-HOURS TO MINUTES

Safeguard blade guide allows grip close to cut for up-front control. Offset-design permits easy 90° cuts into corners and flush cuts to any surface.

Adjustable blade spindle for right, left, backward or forward cuts.

Long-stroke action provides a clean cut, faster work and longer blade life.



LUBE LOGIC

Five ways to

Now's the time for battery check-ups

With cold weather ahead, your batteries will soon work harder than ever. Here's how you can help make sure they're up to it:

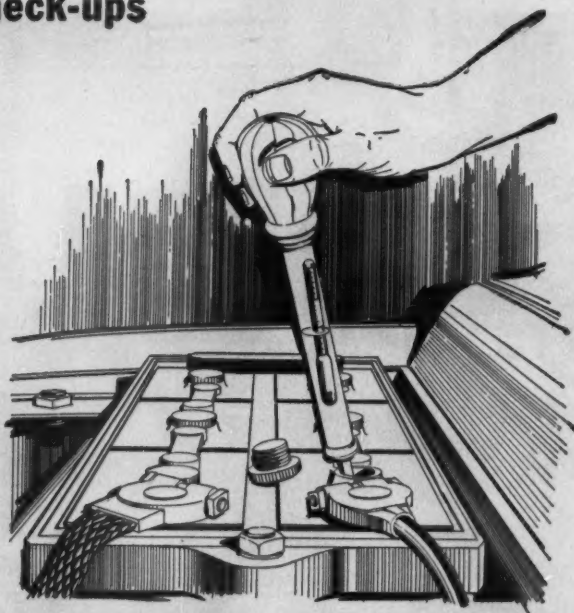
Inspection

- Inspect battery case for cracks and leaks. See that vents in cell caps are open.
- Check battery posts and cable clamps for looseness, breakage or corrosion.
- Using distilled water, bring electrolyte in each cell up to level indicated in cell opening.

Hydrometer test for specific gravity

- Use a temperature-corrected hydrometer to test the state of battery charge. Make sure battery has not been recently fast-charged, nor water added.
- Draw enough fluid from each cell to raise float off the bottom of the hydrometer tube. Holding hydrometer straight up-and-down, take eye-level reading of the neck of the float. Repeat for each cell.
- Note the temperature, and correct hydrometer reading by subtracting 0.004 from the reading for each 10°F. below 80°F. (Example: If hydrometer reads 1.280, and temperature is 70°F., corrected reading would be 1.280 - 0.004 or 1.276.

Normal state of charge for 12-volt battery is 1.260 to 1.280 specific gravity. For a 6-volt battery, 1.265 to 1.290 specific gravity.



LEADING CONTRACTORS—EVERYWHERE—RELY ON TEXACO LUBRICATION



▲ Isbell Construction Company bulldozers remove reefs from river channel on Truckee River Flood Control project near Sparks, Nev. Isbell heartily endorses Texaco's Simplified Lubrication Plan.

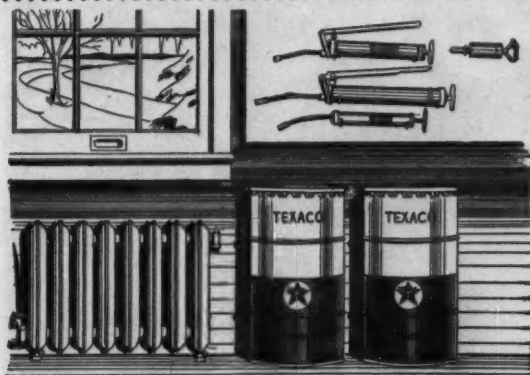


◀ Interstate Highway 80 Project at Colfax, Iowa. Texaco Engineer E. A. Rolwes (right) works closely with Mott Construction Company on the important assignment of keeping equipment on the job and maintenance costs low.



▲ Ledbetter-Johnson gouges out largest rock cut (306 ft.) east of Rockies in highway project near Dalton, Ga. This company uses Texaco lubricants to keep their equipment on the job . . . their costs down.

ease winter maintenance



Grease guns like it warm

Store grease guns this way, properly racked to avoid damage, and they'll give you much better service. Incidentally, lubricants like to be stored warm, too.

Warm up the guns if they're too cold to pump the lubricant. Best way is to bring them into a warm place far enough in advance of use. Don't ever attempt to warm them up by direct application of heat.



Save the engine — not the anti-freeze

Go slow on using last year's anti-freeze. Although it might still give good protection against freezing, chances are those chemical additives that protect the cooling systems of your engines against rust and corrosion have lost their punch. Your best bet, after draining and thoroughly flushing the radiators, is to fill them up with fresh new anti-freeze — such as Texaco P-T Anti-Freeze.



"Easy does it"... after an oil change

When an engine's crankcase is drained — so is the oil pump's intake sump and pipe. And when the engine starts up, the oil pump must first suck up a lot of air before it starts chewing oil.

To avoid possible damage to the engine, idle it first at low speed. The oil pressure should begin picking up in a matter of seconds and reach normal readings within several minutes. Wait until it does — before you start working the engine.



All about mobile lube rigs

- How to make good lube rigs
- How to use lube records to make rigs more valuable
- Special purpose lube rigs
- Pros and cons of mobile and centralized lubrication

These are just a few of the facts about mobile lube rigs you'll find discussed in the March 1960 issue of Texaco's *Lubrication* magazine. We've devoted the whole issue to it — and we'll send you a copy *free*. Write today to Texaco Inc., 135 East 42nd Street, New York 17, N. Y., Dept. CM-22.

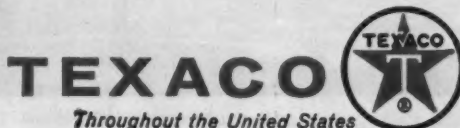


TEXACO LUBRICATION ENGINEERS

From time to time, we'll bring you "sleepers" like these—little angles that can mean big savings in time and money. But for any specific lubrication problem, call on your local Texaco man. He's your *best* source of money-saving lubrication ideas. Remember, "Lubrication is a major factor in cost control."

Texaco Inc., 135 East 42nd Street, New York 17, N. Y.

Tune In: Texaco Huntley-Brinkley Report, Mon. Through Fri.—NBC-TV



Throughout the United States

Canada • Latin America • West Africa

THIN SHELL CONCRETE ROOF PROVIDES UNOBSTRUCTED FLOOR AREA

Lehigh Early Strength Cement Saved Construction Time

• Six intersecting concrete shells form the multi-domed roof of this newly completed, already famous automated post office. Although it's nearly as large as three football fields (300' x 420') the entire structure has only *two* interior columns . . . a design which provided tremendous flexibility for the arrangement and experimental modification of complex mechanical equipment.

Construction of the roof, with its parabolic slopes and rises, was a challenging operation. But careful planning and precise scheduling by Gilbane Building Company was seen in the progress of the work, much of which had to be done during short Rhode Island winter days.

Contributing to the fast concreting schedule was Lehigh Early Strength Cement, which made it possible to start stripping forms in just 7 days. This is about $\frac{1}{4}$ the time that would have been required with normal cement . . . and is typical of the advantages of Lehigh Early Strength Cement in modern concrete construction. Lehigh Portland Cement Company, Allentown, Penna.

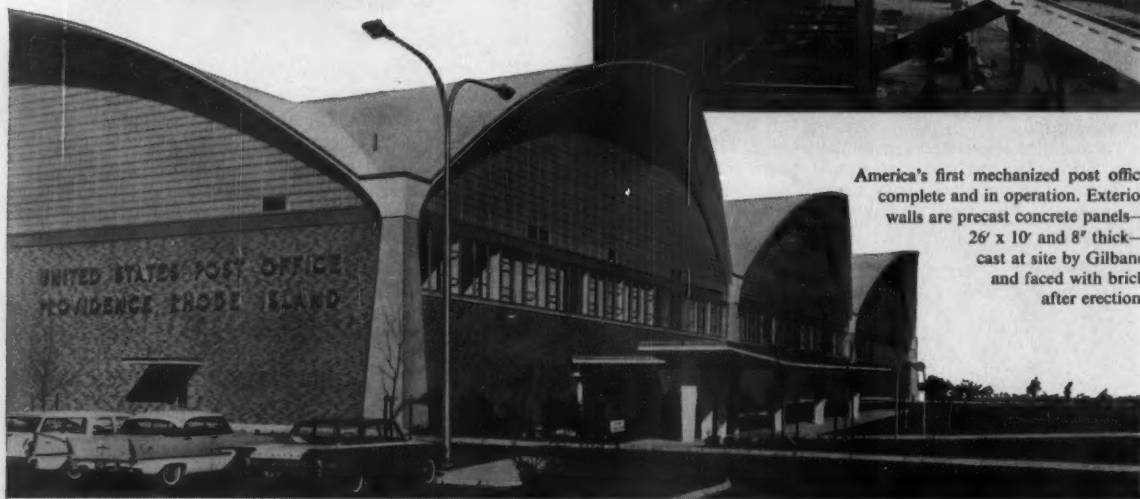


Placing lightweight—110 lbs. per cu. ft.—concrete was an exacting operation. Two pours, one of 540 cu. yds. and one of 260 cu. yds., were required for each 140' x 150' shell unit. Shells are only 6" thick.

Complex mechanical equipment needing unobstructed floor area can be seen in this view. Height from floor to peak of each dome is 55'.



LEHIGH CEMENTS



America's first mechanized post office complete and in operation. Exterior walls are precast concrete panels—26' x 10' and 8" thick—cast at site by Gilbane and faced with brick after erection.

• *Project Developer and Coordinator:* ITT—Intelelex Systems Inc., New York City.

• *Architect-Engineer:* Charles A. Maguire & Associates, Providence, R. I.

• *Contractor:* Gilbane Building Co., Providence, R. I. and New York, N. Y.

• *Lightweight Concrete:* Pawtucket Redi-Mix Concrete Co., Pawtucket, R. I.

• *Regular Concrete:* Morse Sand & Gravel Co., Attleboro, Mass.

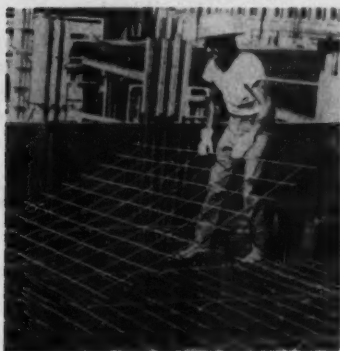
JOB TALK . . .

continued from page 22

job, a 3-ft section at each end of the screed is raised $1\frac{3}{4}$ in. to pass over gratings that stick up 1 in. above the deck slabs on both sides of the bridges.

Brunalli specified an optional underslung design for the screed so that rollers on each end can ride on rails located above the curb when pouring a 22-ft-wide slab. On those occasions when the contractor must make two pours to cover a 42-ft width, one end of the screed rides on a pipe located in the center of the slab.

Levers on the roller assemblies raise the beam $\frac{1}{2}$ in. off the slab so the unit can roll back for additional passes. Winches with a ratio of 9 to 1 enable two men to move the screed along the rails. Rings attached to the 1,163-lb screed assembly allow it to be lifted by a crane when moving from bridge to bridge.



Hinges Ease Handling

Hinged sheets of welded wire fabric that reinforce the waffle-type deck slabs of a new Dayton, Ohio, garage cut handling costs for the steel-placing subcontractor, H. E. Pedersen Co. of Cincinnati.

Trucks deliver the style 612-44 fabric to the job site in 16-ft-long, 9½-ft-wide sheets. A hinge along the longitudinal wire nearest the center of each sheet reduces the width when folded to 5 ft. This allows bundles of the fabric to be trucked through local streets without overhang problems that might necessitate a special permit.

General contractor Charles A. Shook, Inc., of Dayton uses a Koehring 205 crane to unload the sheets in bundles of 30 at the job site. A two-man crew handles placement of the folded sheets.



CONSTRUCTION MEN! SEE FOR YOURSELF... the most versatile business machine in the business world **DOES MORE JOBS!**



On Wall Street, Michigan Avenue . . . Main Street U.S.A. . . "Thermo-Fax" Brand Copying Machines are copying correspondence, addressing labels, laminating, making statements, projection transparencies, and paper printing plates. Also, systems papers for as little as 2¢ a copy. Plus many more jobs.

And all-electric "Thermo-Fax" Copying Machines are delivering each job perfectly dry in just 4 seconds!

The "Thermo-Fax" Copying Machine is the business man's business machine for one sound reason . . . does more jobs! See for yourself. Mail this coupon.

ADDRESSING LABELS PROJECTION TRANSPARENCIES LAMINATING
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Thermo-Fax[®] BRAND COPYING MACHINES

  <p>MINNESOTA MINING AND MANUFACTURING COMPANY</p> <p>...WHERE RESEARCH IS THE KEY TO TOMORROW</p> <p><small>THE TERM "THERMO-FAX" IS A REGISTERED TRADEMARK OF 3M COMPANY</small></p>	<p>MINNESOTA MINING AND MANUFACTURING CO. Dept. DDM-21, St. Paul 6, Minnesota</p> <p>At no obligation, I'm interested in information about how a "Thermo-Fax" Copying Machine can simplify the jobs mentioned above.</p> <p>Name _____</p> <p>Company _____</p> <p>Address _____</p> <p>City _____ Zone _____ State _____</p> <p><input type="checkbox"/> Check if you now own a "Thermo-Fax" Copying Machine.</p>
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Circle 27 on Reader Service Card



1 One man on spreader lays base for mesh.

2 One man on spreader-finisher lays top and also finishes it with first screed.

3 One man on finisher, gives accurate finish with tandem screeds.

This same man also operates the finisher-float towed behind the finishing machine for final close-tolerance cor-

rection with suspended oscillating screed and 30" wide float pan.

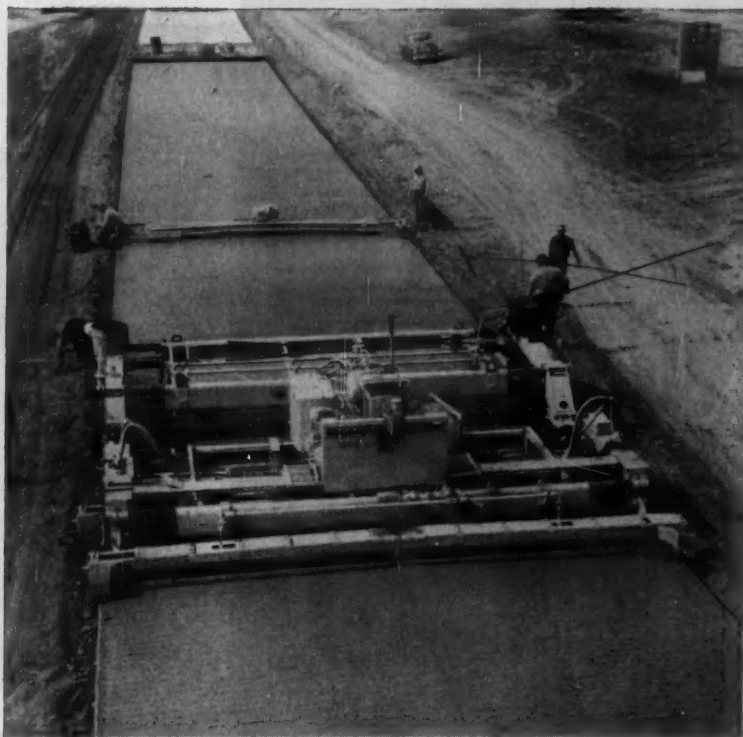
4 Three men (one for each side and the third with full-width lute) edge and complete the surface.

CONSTRUCTION METHODS



5 Burlap drag requires no operator.

6 Last man applies curing compound.



THE MACHINES DO THE WORK: Top course has already been spread, struck off and screeded by Jaeger Spreader-Finisher. Thus the finishing machine has an ideally prepared surface to work on. The Jaeger Finisher-Float, towed behind, carries its own oscillating screed and 30" wide float pan suspended between long side trucks on bogey axles, providing a 4-to-1 ratio of correction independent of any irregularities in the adjacent side forms. This final "kiss" finish leaves a machine-perfect surface ready for straight edges, burlap drag and spray coat.

How a small crew can give you high production on this year's work

Under today's close bidding, the cost savings made with this efficient paving train can well make the difference between break-even and profit.

In the Jaeger Spreader-Finisher you have a one-man machine that spreads and makes first finishing pass in the same operation.

When followed by the Jaeger combination of finishing machine and finisher-float, you have a sequence of 3 additional screeds and a float pan, producing a surface that meets the most rigid specifications with only one operator on the finishing machine and 2 or 3 men for final edging.

HYDRAULIC-SMOOTH OPERATION

Jaeger hydraulic power, giving easy finger control of all spreading and finishing functions, means fast, smooth, more accurate operation. Eliminates common mechanical problems.

Hydraulic self-widening up to 6' is also available in both spreaders and finishers—a tremendous time-saver on variable widths and flared slab. On interchange work this infinite width adjustability, plus Jaeger's hydraulically controlled diagonal screed which spreads up-hill on super-elevated ramps, can save hundreds of dollars a day by maintaining full capacity operation of the contractor's plant.

Before you bid, before you plan this year's work, ask your Jaeger distributor to give you detailed performance data—or write for our complete paving catalog.

THE JAEGER MACHINE CO., 800 Dublin Ave., Columbus 16, Ohio. Jaeger Machine Co. of Canada, Ltd., St. Thomas, Ontario. Worldwide sales and service through Jaeger International Corp., Apartado 137, Panama, R.P.

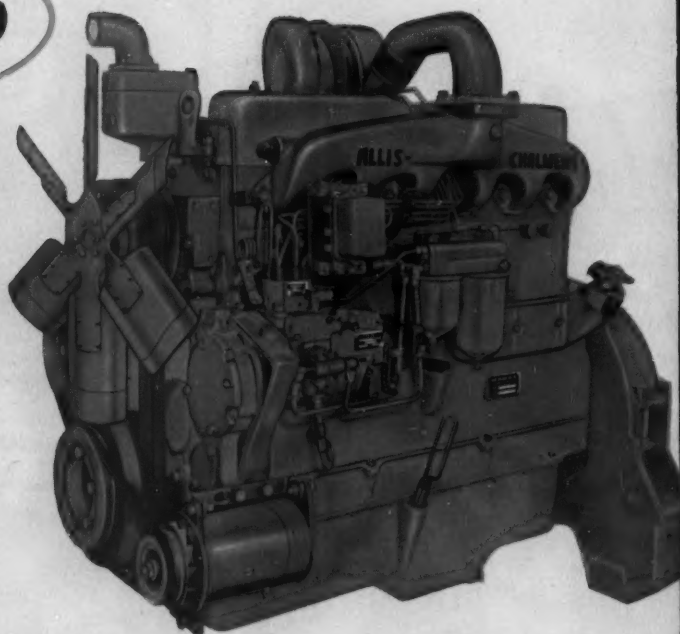
JAEGER

HYDRAULIC-SMOOTH PAVING EQUIPMENT

Circle 29 on Reader Service Card

11000

210 hp at 2200 rpm
(Turbocharged)



NOW

**A NEW
KIND OF
DIESEL**

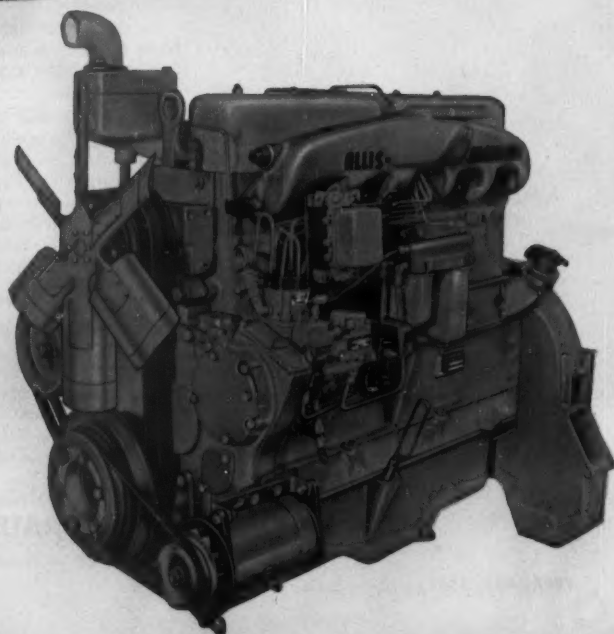
WORK POWER



in the 145-210 hp range

10000

145 hp at 2200 rpm



Nowhere is there anything like these two great new Allis-Chalmers diesels — nothing compares with them in their range!

Real Work Power — The 210 hp in the turbocharged 11000 and 145 hp in the 10000 is down-to-earth power you can use — *work* power to operate smoothly under extreme load conditions.

High, Sustained Torque gives you work power throughout the entire operating speed range — power that really hangs on.

Great Fuel Economy — These new diesels have a unique combustion system that thoroughly mixes fuel and air for complete combustion. These engines run so efficiently that they work *extra hours every day* on the same amount of fuel used by other diesels in their range.

Clean Exhaust is another result of efficient fuel utilization in the 11000 and 10000 diesels. Fuel goes *out* in horsepower — not *up* in smoke!

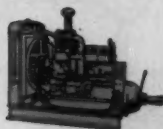
Fastest Starting diesels in their class. They start without ether or pre-heating, even in freezing temperatures.

Find out more about what this new kind of work power can do for *you*. See your Allis-Chalmers dealer. Ask for new Bulletin BU-718.

**Available
in all these
models**



ENGINES



OPEN POWER
UNITS



CLOSED POWER
UNITS



GENERATING
SETS



MARINE
DIESELS



TORQUE CONVERTER
UNITS



OFF-HIGHWAY
VEHICLE ENGINES

ALLIS-CHALMERS

POWER FOR A GROWING WORLD

11000 AND 10000 JOIN THE

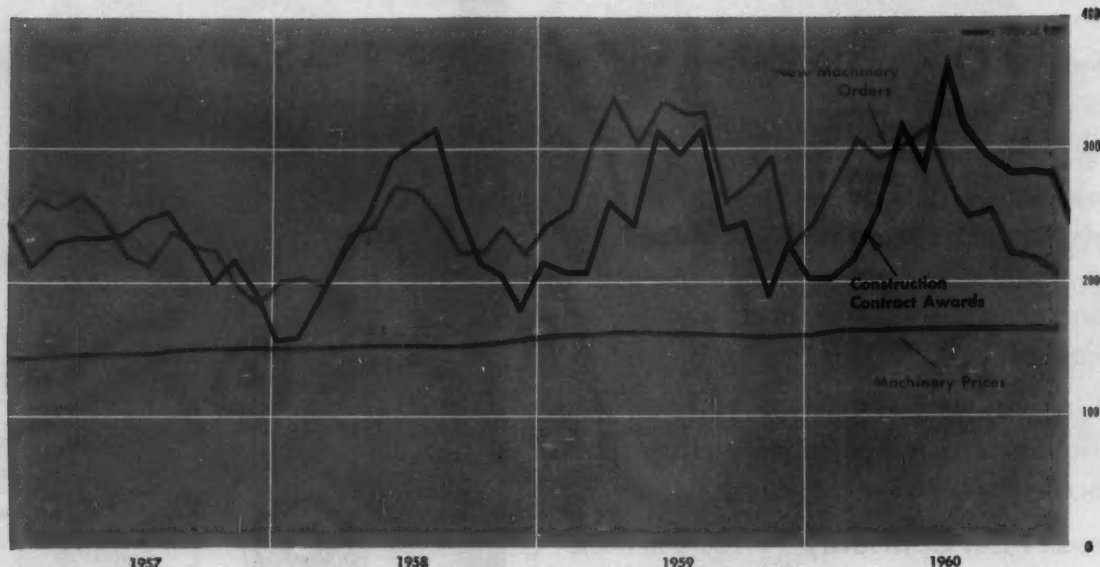


TEAM OF MODERN DIESEL POWER

85-22

Circle 31 on Reader Service Card

Trends in the Machinery Market...



Some Prices Drop, Sales Remain Slow

REDUCED LIST PRICES for a few construction equipment items show how the continuing lag in new orders received by manufacturers is intensifying sales competition.

Last December's indexes of list prices, f.o.b. plant, moved down 2% for power shovels in the 2-2½-yd dipper capacity group and edged 0.8% lower for 6-yd truck mixers. These cuts brought about a slight dip in the over-all equipment price index computed by the U. S. Bureau of Labor Statistics.

From a record 177.3 on Nov. 15, it eased down to 177.1 on Dec. 15, based on average list prices in 1947-49 as 100. The price change in truck mixers actually goes back to November. The only other 1960 price reduction for a major item covered by the BLS indexes happened in October when the BLS index for concrete finishers dropped 14%.

For the full year 1960, the index of average list prices rose 2.4%. This was about 1% more than 1959's slim rise of 1.5%.

These price indexes did not necessarily show the trend of actual prices that contractors paid for new equipment in 1959-60. There had been some price shading that meant cheaper prices in 1960 than in 1959 for some contractors.

Contractors are in a good position to obtain good bargains for new equipment this year because sales competition will remain keen. Manufacturers' shipments will equal 1960's volume of \$1.6 billion, including exports, says the Business & Defense Services Administration of the U. S. Dept. of Commerce. This output is barely over 50% of the construction equipment industry's annual capacity of \$3 billion, according to BDSA.

Price Index

	DEC. 1960	MONTH AGO	YEAR AGO	% CHANGE 1959-1960
All Types of Equipment	177.1	177.3	172.9	+ 2.4
Cranes; Draglines, Shovels	173.5	174.1	170.5	+ 1.8
Shovel, ½ cu yd	169.3	169.3	165.0	+ 2.6
Shovel, ¾ cu yd	175.4	175.4	173.9	+ 0.9
Shovel, 1-1½ cu yd	189.3	189.3	184.3	+ 2.7
Shovel, 2-2½ cu yd	169.1	172.4	164.7	+ 2.7
Shovel, 3-3½ cu yd	167.8	167.8	167.8	0
Shovel, 6 cu yd	197.9	197.9	195.0	+ 1.5
Crane, truck mounted	168.2	168.2	166.2	+ 1.2
Crane, tractor mounted	135.1	135.1	135.1	0
Bucket, clam shell	162.9	162.9	157.5	+ 3.4
Bucket, dragline	169.3	169.3	169.3	0
Scrapers and Graders	166.6	166.6	165.8	+ 0.5
Scraper, 4 wheel, 8-10.5 cu yd	155.0	155.0	155.0	0
Scraper, 4 wheel, 12-15 cu yd	156.8	156.8	156.8	0
Scraper, 2 wheel, 15-19.5 cu yd (a)	126.2	126.2	124.9	+ 1.0
Grader, heavy duty	174.1	174.1	172.6	+ 0.9
Grader, light & medium	170.9	170.9	171.1	- 0.2
Tractors (non-farm, incl. industrial)	195.3	195.3	188.7	+ 3.5
Wheel type, off-highway (a)	129.2	129.2	129.0	+ 1.5
Crawler type, 50-74 dhp	205.3	205.3	193.6	+ 5.5
75-99 dhp	204.3	204.3	197.2	+ 3.6
100-154 dhp	199.2	199.2	192.4	+ 3.5
155-200 dhp	208.6	208.6	201.3	+ 3.6
Machinery, Tractor Mounted	176.7	176.2	169.0	+ 4.6
Dozer, cable controlled	164.8	164.8	154.4	+ 6.7
Dozer, hydraulic controlled	201.9	201.9	186.6	+ 8.2
Cable power control unit	152.9	152.9	151.4	+ 0.9
Loader, tractor shovel	164.6	164.6	162.5	+ 1.3
Specialized Machinery	158.0	158.8	156.2	+ 1.7
Ditcher	153.8	153.8	150.1	+ 2.5
Roller, tandem	226.4	226.4	220.2	+ 2.8
Roller, 3 wheel	178.7	178.7	174.9	+ 2.2
Ripper and rooler	164.5	164.5	150.5	+ 9.3
Dewatering pump, 10 M gph	111.5	111.5	110.3	+ 1.1
Dewatering pump, 90 M gph	151.5	151.5	151.0	+ 0.3
Portable Air Compressors	167.5	167.5	167.5	0
Contractor's Air Tools	181.6	181.6	181.6	0
Mixers, Pavers, Spreaders	157.1	157.4*	157.5	+ 0.3
Mixer, portable, 11 cu ft	166.6	166.6	166.8	+ 0.2
Mixer, portable, 16 cu ft	172.7	172.7	172.7	0
Mixer, paving, 34 cu ft	131.9	133.0*	132.7	- 0.6
Concrete finisher & spreader	196.7	196.7	193.5	+ 1.6
Bituminous distributor	173.5	173.5	196.7	-11.8
Bituminous spreader	126.2	126.2	122.3	+ 3.1
Bituminous paver	179.4	179.4	170.2	+ 5.4
Off-Highway Trucks, Wagons (b)	102.5	102.5	101.1	+ 1.3
Contractors off-highway truck (b)	102.0	102.0	101.1	+ 0.9
Trailer dump wagon (b)	106.7	106.7	101.4	+ 5.2

* (a) January, 1955 = 100 * (b) January, 1958 = 100 * Revised
BLS Primary Market Price Indexes, U. S. Department of Labor, 1947-49 = 100

THE NEW LOOK

Here is the NEW LOOK in Construction Equipment. It is more automatic, more versatile, has more built-in precision than ever before. It is the new Blaw-Knox look. ■ It lets you do more jobs, more economically. ■ It sets new standards of reliability, the modern, automatic way. ■ See the automatic features, the rugged quality that lets you bid closer, work tighter, and make more money. ■ Take a NEW LOOK at Blaw-Knox!

BuKaneer Truckmixers — 4- to 10-cu. yd. drums with flywheel and front engine power take-off as well as separate engine drive. Four forward and reverse drum speeds. Simplified controls fore and aft. Air-electric drum direction control with drum Tachometer standard. Standard 125-gal. water tank overshoots cab for better weight distribution, is equipped with sight glass and measuring gauge. Options: pressurized flush systems, quick opening drum hatch, closed end drum, recirculating water systems, tank compartmentation.



BLAW-KNOX

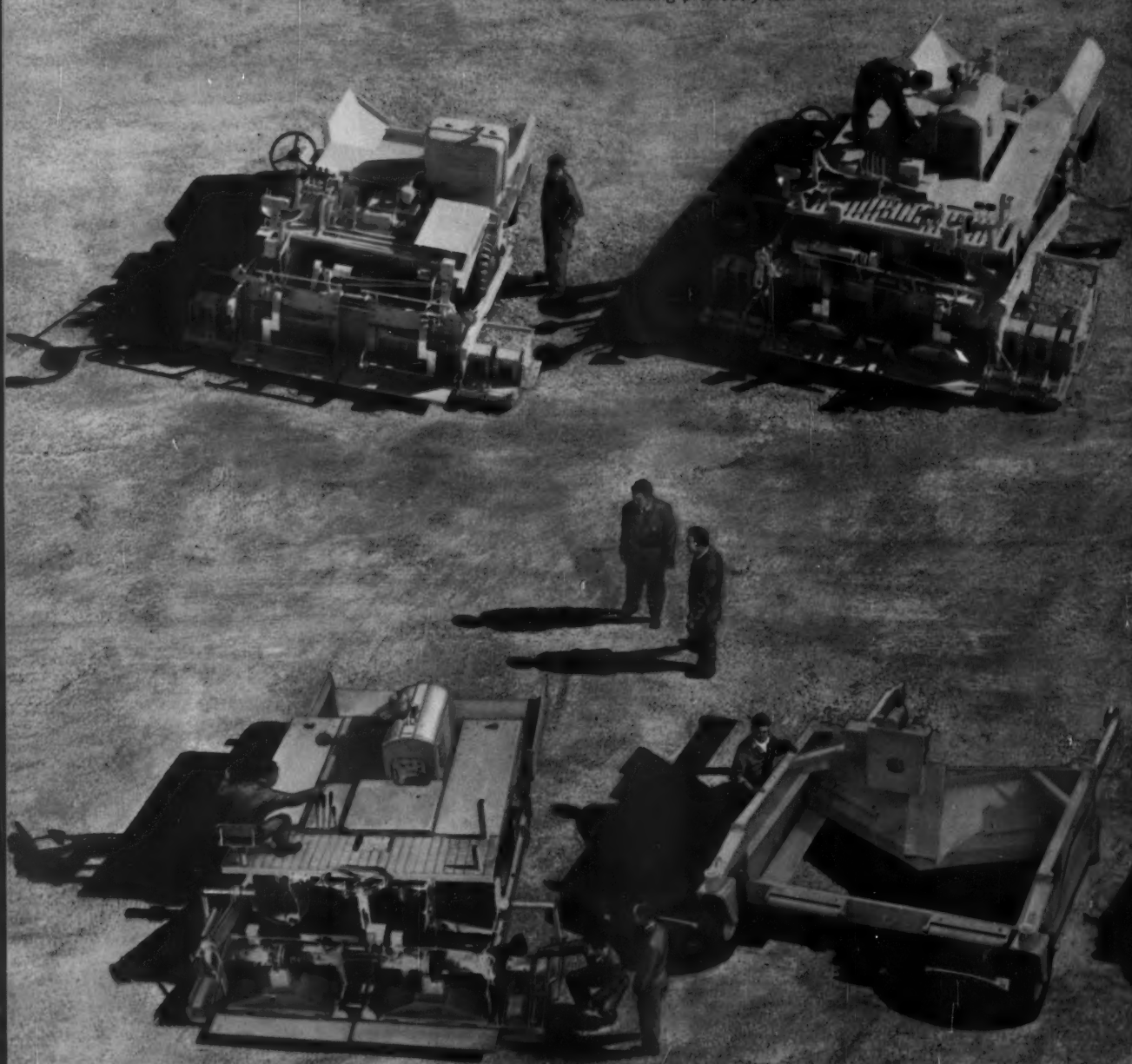
Universal Batch Control System (right)— Fully automatic cycling from preset mixes for simultaneous or cumulative batching using dial scales. Wide range of independent selector switches permits single material discharge without resetting. Locked formula panel for specification work. Can be equipped with digital or analog recording devices. System uses standard, readily available electrical components housed in dust-tight, drip-proof enclosure. Modular components make future expansion simple.

Uni-rect Design Batch Plants (far right)— Unitized, factory preassembled components make a wide variety of mix designs available in 2- to 8-cu. yd. automatic plants with 1 to 8 self-cleaning aggregate compartments, 1 or 2 150-barrel water-tight cement compartments. Two auxiliary cement compartments available. Equipped with 75-t.p.h. cement elevator. Complete plant shipped to you in factory assembled units for fast, easy erection.



Suburban Paver—Automatic control, 4-ton hopper, hydraulic folding wings. Right and left conveyors synchronized with augers. One piece screed with extensions to 12'. Full hydraulic wheel steering. Five paving speeds from 10 to 127 f.p.m. Travel speed 8.6 m.p.h. New hydraflated 10:00 x 20, 12-ply tires, and locking differential. Option: revolutionary new grade control for averaging out grade imperfections, adaptation to previously cut grade variations, and matching previously laid mat.

Express Paver—Automatic air-electric fingertip controls, 10-ton hopper with hydraulic folding wings. Independent control of left and right feed conveyors interlocked with control of augers. One piece screed design with extensions to 16'. Full hydraulic wheel steering. Eight paving speeds from 10 to 62 f.p.m. Travel speed 7 m.p.h. New hydraflated 10:00 x 20, 12-ply tires. Gasoline or Diesel power plant. Option: revolutionary new grade control for averaging out grade imperfections, determining grade from guide devices, adaptation to previously cut grade variations and matching previously laid mat.

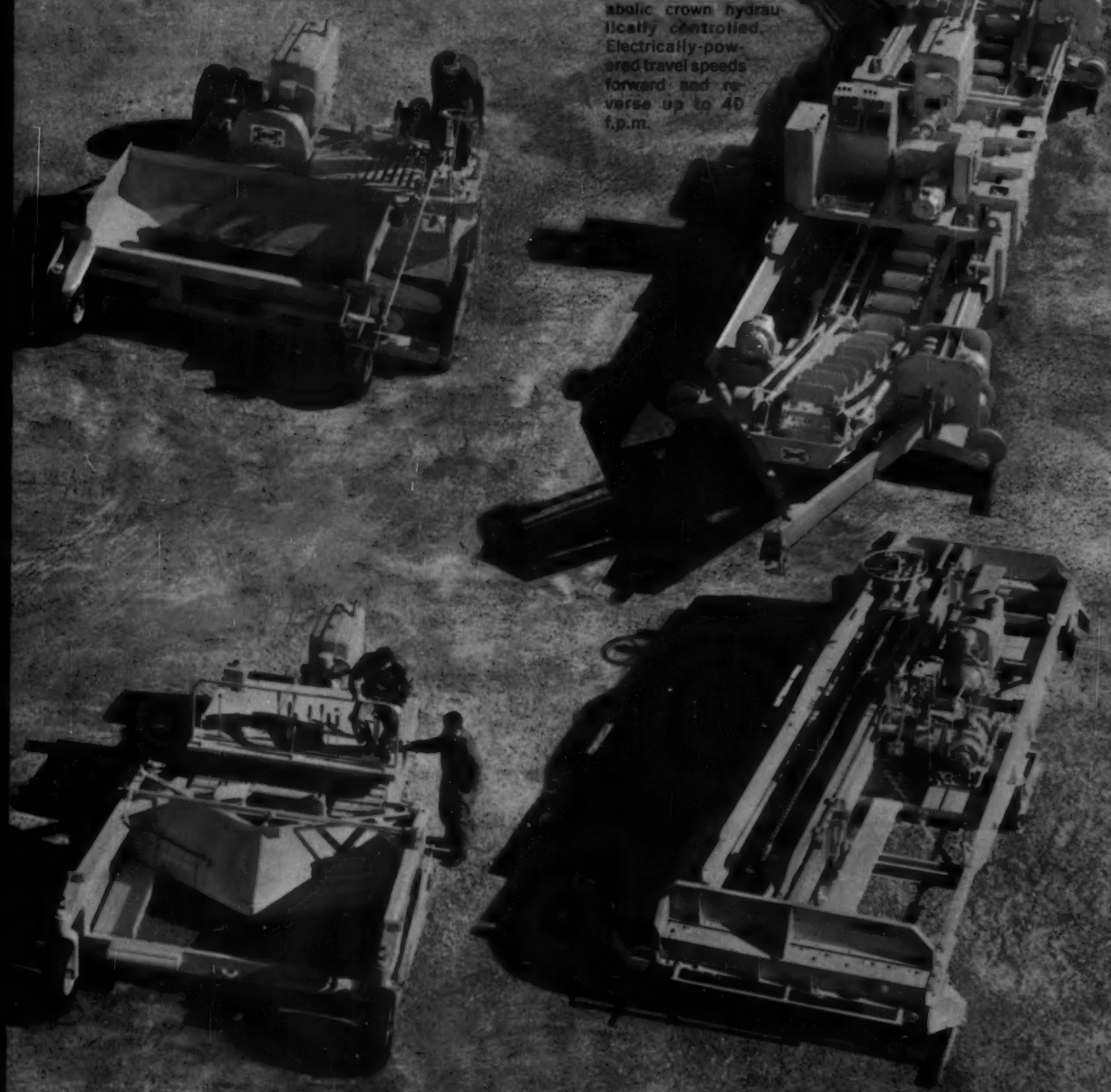


Super Paver—Automatic, air-electric fingertip controls, 12-ton hopper with hydraulic folding wings. Independent control of left and right conveyors interlocked with control of augers. Automatic control of material level ahead of augers. One piece screed in 10' width with extensions to 19'. Hydraulically driven tamper. Full hydraulic wheel steering. Eight paving speeds from 16 f.p.m. to 117 f.p.m. Four forward and reverse travel speeds from 6 to 11 m.p.h. Drive wheels equipped with 16:00 x 25 low-pressure earth mover tires. Full power brakes. Gasoline or Diesel power plant. Option: revolutionary new grade control for averaging out grade imperfections, determining grade from guide devices, adaptation to previously cut grade variations and matching previously laid mat.

Base Paver Attachment—Big capacity unit designed especially for use with standard tractors of sufficient power. New universal hitch makes attachment easy. Equipped with its own engine-driven oscillating screed, and mechanical crown adjustment. Spreads stone, slag, gravel, soil, cement and plant mix aggregates 1" to 20" deep in widths from 10'-0" to 16'-0". Hopper lifts completely for travel.

Road Widener—Versatile, one-man unit spreads any kind of aggregate, lays all types of bituminous mixes, spreads and finishes concrete. Spreads aggregate and bituminous materials in 2' to 10' widths, spreads and finishes concrete in 2' to 6' widths. 15' slip form attachment for concrete widening. Strike-off gate assemblies for each type material used. Spud vibrators for use with low slump concrete.

Sub-Grader—Revolutionary pushbutton power widening from 12' to 28'. Automatic control system sets frame, conveyor and cutter bowl adjustment up to 4'. Easy-to-add sections readjust conveyor and cutter unit to 8' to 12'. Entire range of depth adjustment made with synchronized electric power from 0" to 12", 14" of height adjustment for form clearance at each end truck, independently or simultaneously. V-crown adjustment electrically controlled to within 3". Parabolic crown hydraulically controlled. Electrically-powered travel speeds forward and reverse up to 40 f.p.m.



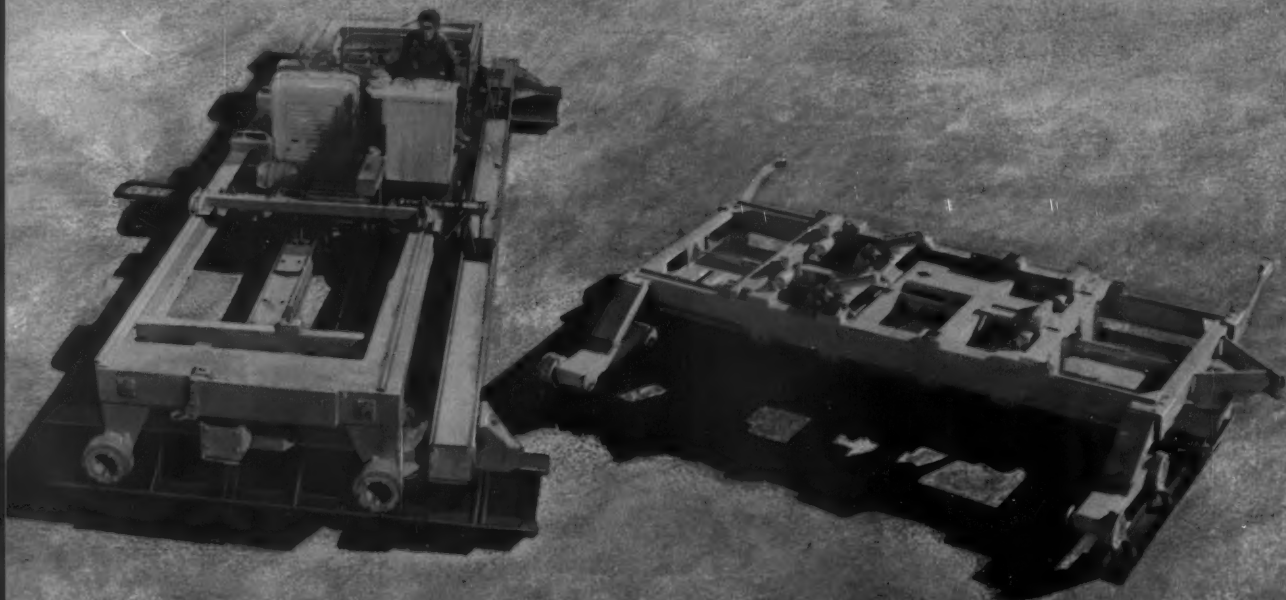
Self-Propelled Base Paver—Big capacity unit spreads stone, slag, gravel, soil cement or plant mix aggregates 1" to 20" deep in widths from 10' 10" to 16' 0", at the rate of more than 400 t.p.h. Tractor unit is equipped with 21" wide crawler shoes for maximum traction and flotation on softest base. Equipped with high-speed oscillating screed, front wheel power steering, dual controls. Four forward and four reverse working speeds, one forward and reverse travel speed.

Concrete Spreader—Automatic transverse blade delivers spreading action regardless of where concrete is placed on subgrade without segregation. Machine available in two standard widths—10' to 15' and 20' to 25'. Vibratory paving attachment available to compact concrete simultaneously with spreading action. Rubber-tire transportation wheels available for spreader and vibratory attachment.

BLAW-KNOX

Finisher—Revolutionary pushbutton power widening from 12' to 28' without frame alteration in an infinite range of increments. Frame positions automatically without bolts or clamps. Screeds available in both crown bolt and quick adjustable types. Screed speeds infinitely variable between 40 and 105 strokes per minute, are controlled independently from traction speeds. Traction speeds infinitely variable between 8 and 80 f.p.m. through heavy-duty, high torque, variable frequency AC motors and gear reducers in each end truck. Power supplied by variable speed alternator driven by 4-cylinder engine.

Finisher Float—Revolutionary, pushbutton power widening from 12' to 28'. Screed and pan-type float are quick adjustable for crown and operating position with synchronized electric power. Suspended oscillating screed is powered from Finisher through electric clutch and universal drive. Float is attached to Finisher and controlled through its own pushbutton controls mounted near the control panel of the Finisher.

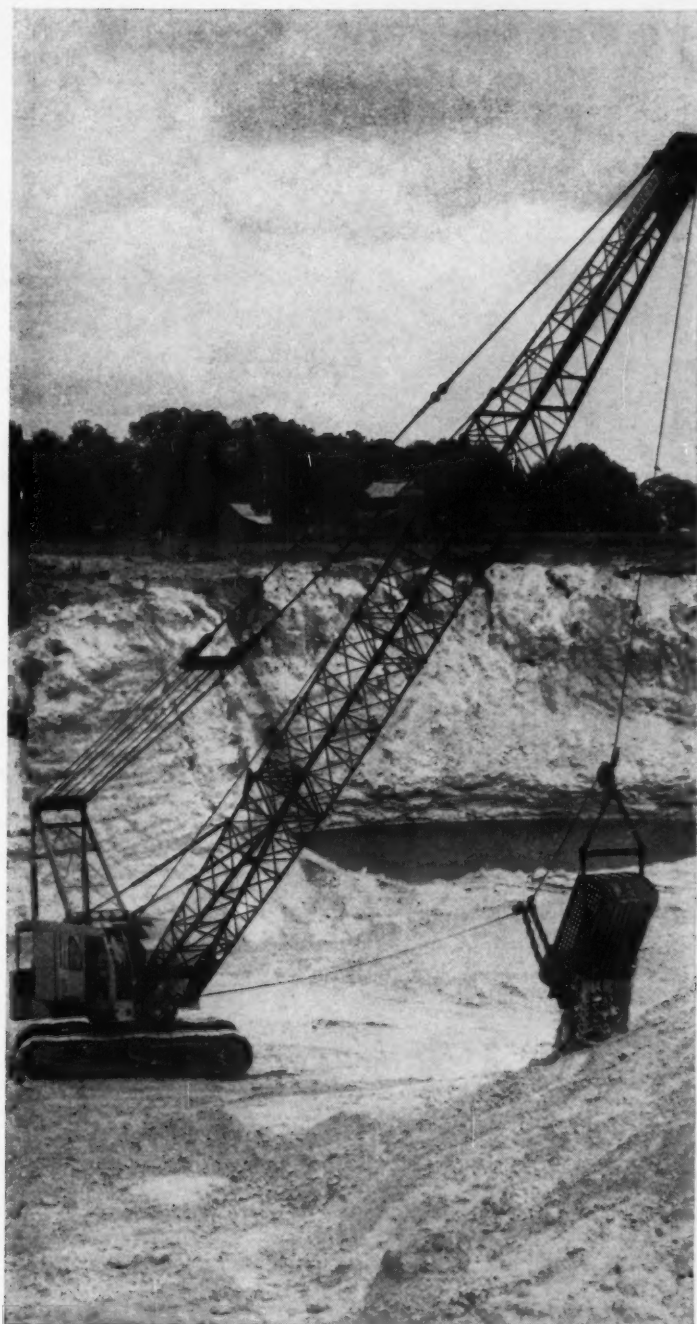


BLAW-KNOX

ON THE WAY: MORE OF THE NEW LOOK

Soon you'll see more Blaw-Knox Equipment with the modern, automatic features of the new look. For instance: a new self-widening, slip-form Concrete Paver, a batch handler for dual drum Concrete Pavers, a central mix Concrete Spreader, Mobile and

Portable Batch Plants, all Aluminum, Hydrostatic-drive and trunnion-mounted Truckmixers, compaction rollers, centrifugal Concrete Mixers, and a new Hydroscoop. Keep in touch with your Blaw-Knox dealer for the latest information on the NEW LOOK.



Using 4-yard bucket, new 900 Series AMERICAN proves its superior performance in limerock for Newberry, Corp., Newberry, Florida... a subsidiary of Duval Eng. & Contr. Co.

"best balanced machine in its class"

That's what T. B. Bibby — veteran operator with 38 years on dragline work — has to say about the 900 Series AMERICAN pictured here.

New from the ground up, the 900 Series AMERICAN combines the *best of today's* operating features, plus *years ahead* advantages not available in any other 4½-yard excavator. For example:

Telescoping axles on the 900 Series let you extend crawlers outward an extra 2½ feet overall for greater full-circle operating stability. Crawler side frames can be detached by simply removing two large bolts . . . greatly speeds knock-down for travel. Continuous, deep-section deck channels, 4 feet deep at center, give you a machinery deck of unmatched strength and rigidity. Extra-wide drums permit single layer wrapping with 90 or 100 ft. dragline boom.

There's much more to tell about this new and important entry into the excavator field . . . graduated air controls . . . 18" ground clearance . . . choice of direct drive, single or 3-stage torque converter . . . independent swing . . . power load lowering. See your AMERICAN distributor — he'll help you analyze the 900 Series in terms of profit-potential on *your* type of work.

CC-711

EXCAVATORS
½ to 4½ yds.

CRANES
12½ to 110 tons

DERRICKS-HOISTS
to 800 tons

REVOLVER CRANES
to 400 tons

FORGED FITTINGS
FOR WIRE ROPE
AND CHAIN

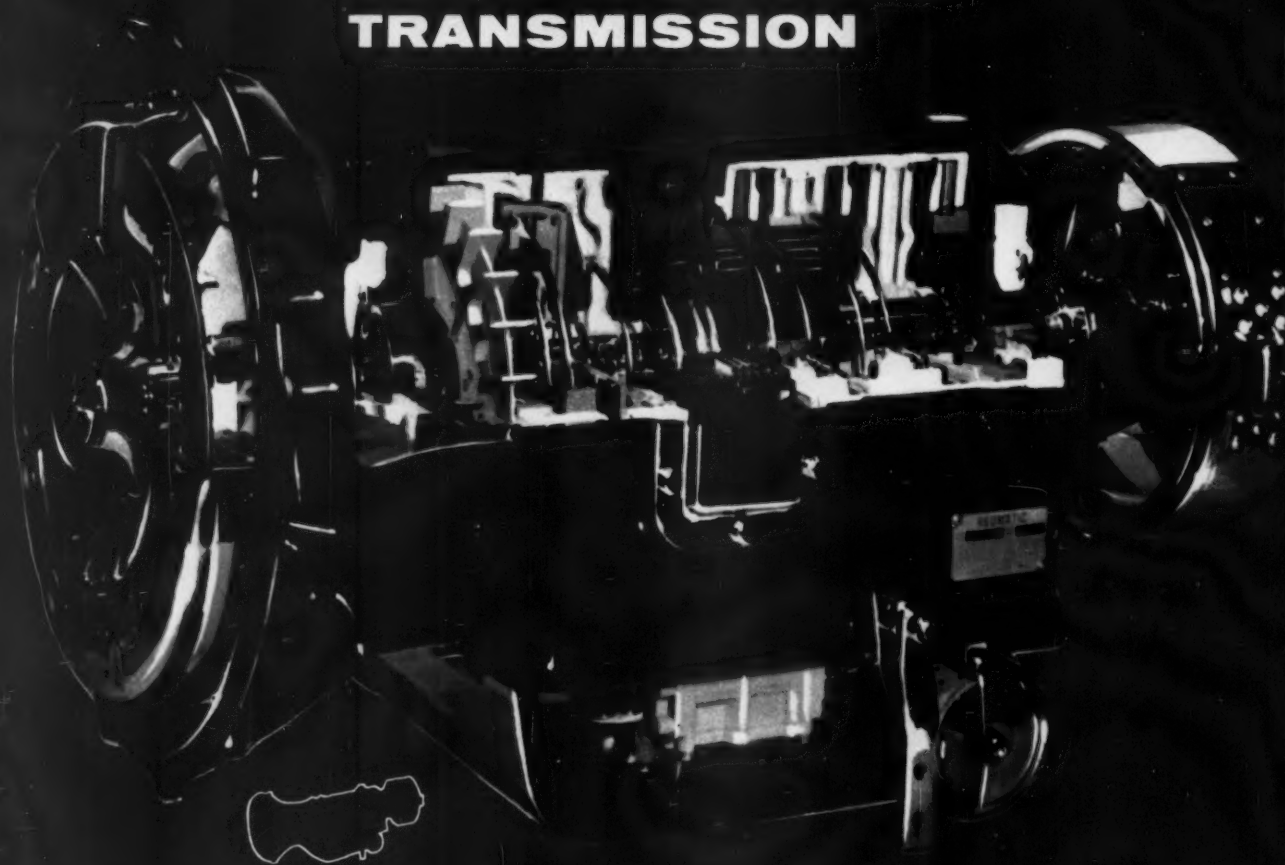
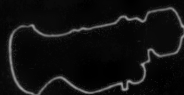
(Crosby-Laughlin Div.)



AMERICAN HOIST
and DERRICK COMPANY
ST. PAUL 7, MINNESOTA

REO

**FULLY PROVED,
FULLY AUTOMATIC
TRANSMISSION**

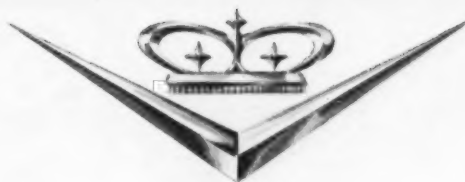


REO and REOMATIC A PROVEN CONCEPT . . . ReoMatic transmission eliminates the conventional clutch pedal and the guesswork of inexperienced drivers. Automatically, it selects the most efficient gear ratio in each drive range and shifts gears under full throttle in response to load demands upon the engine. There's no power interruption, no engine lugging, far less chance of shock load damage to drive lines. Result: operators of both over- and off-highway fleets report faster operating schedules, reduced maintenance and downtime costs, prolonged engine life. Make no mistake. ***The ReoMatic is not a beefed up automobile transmission.*** It's a rugged, heavy duty unit specifically engineered to team up with famous Gold Comet engines (130 to 235 h.p.) in the ***World's Toughest Trucks.*** So before you buy anything, get the full story on the Reo that's right for your job — equipped with ReoMatic fully automatic transmission.

MATIC



Gold Standard of Values



REO MOTOR TRUCK DIVISION, THE WHITE MOTOR CO. • LANSING 20, MICH.



Job records prove Firestone's **GIANT TIRE TEAM GAINS BIG YARDAGE!**

1. **Firestone Giant Tires** hold the line against downtime to widen your profit margin. Cost-cutting toughness is built into Firestone off-the-highway tires with Shock-Fortified Nylon cord and Firestone Rubber-X, the longest-wearing rubber ever used in Firestone off-the-highway tires.
2. **Firestone Giant Tire Service** is the job of experts who match the right Firestone tire to your equipment, light and heavy. These men provide 24-hour service for every tire on the project to help you meet tight schedules.

Call your Firestone Dealer or Store and get the word how Firestone's Giant Tire Team turns downtime into worktime. Or, write: Manager, Off-The-Highway Tires, The Firestone Tire & Rubber Co., Akron, Ohio. **Always Specify Firestone Tires When Ordering New Equipment.**

Tune in Eyewitness to History every Friday evening, CBS Television Network

Firestone

BETTER RUBBER FROM START TO FINISH

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▲ Circle 40 on Reader Service Card

CONSTRUCTION METHODS

Inflation Can Wipe Out Profits

AT STAKE in the great political debate now underway is the immediate outlook for the construction industry. Will it reap healthy profits based on a record volume of work? Or will the industry again fall victim to an inflation-ridden, profitless prosperity?

To a large extent, the choice depends on the actions of the new administration and Congress. Just as it did during the last three decades, the construction market in the Sixties will rely heavily on federal policies and federal financing to project it along the growth path.

Construction emerges as a key—if not the key—industry as the new administration prepares its course of action for 1961. Construction played a prominent role in the reports of President Kennedy's "task forces," those panels of experts that came up with battle plans for attacking such basic problems as how to:

Modernize our cities' blighted areas.

- Provide a first-rate school system.
- Rescue chronically depressed areas from economic starvation.
- Build housing for the elderly.
- Provide adequate mass transit facilities in urban areas.
- Use construction to head the economy out of recession.
- Accelerate missile base construction.

Taken one at a time, most recommendations expressed or implied by the Kennedy task forces are likely to meet with the general approval of the voting public—including contractors and suppliers.

But taken together, they add up to many billions of dollars that could give the country a strong dose of cost inflation if financed by federal deficits.

On the financing side, the task force reports include such drastic proposals as cutting the interest rate ceiling on FHA-insured mortgages from 5.75% to 4.5%; paying direct federal subsidies for low-income occupants of privately owned and financed rental housing, and authorizing repay-

able federal advances to the states to meet their 10% interstate highway matching fund obligations.

The present recession in business activity complicates the problem of producing a 1961 legislative program that will contribute to national economic growth and provide new gains for the construction industry. The new administration's concern over how to reverse the recession may well lead to expedient action that might actually undermine the health of the construction industry.

It's this danger that makes it important for construction men to support those proposals that promote real growth for their industry, and to oppose legislation that would curb the industry's growth—or, more likely, bring false growth and profitless prosperity fostered by cost inflation.

Awards Set Record

While the over-all economy takes a breather, construction jogs along at a record clip. As far as the heavy construction industry goes, its market has never been healthier. Contracts reached a record \$22.9 billion in 1960, as reported by CONSTRUCTION METHODS. This was a 12% jump over 1959 and a 5.5% gain over the 1959 record. Although private construction provided the main push toward last year's record, 1960 also saw a sharp rebound in state and local public works. During the year ahead, public works are going to boom to a new high, while a drop in industrial construction awards will weaken the private market.

The prices of basic materials, labor, and machines that contractors buy have been much steadier in the last 2 yr than at any other time in the past decade. This has enabled contractors to "catch up" some with the cost of inflation. Higher productivity also has eased the cost-price squeeze. And there's hope that 1961 job profits will be higher than at any time in the past 3 yr. Although these gains—record volume and

steadying costs—were a long time coming, few contractors will say they're satisfied. The industry's capacity is great enough to handle far more work than even the record volume that went to contract in 1960. And it can handle it without straining its resources or creating shortages that would unleash inflation and cheat the industry of real growth.

Competition Remains Keen

Continuing growth in the numbers of construction contractors and the expansion of established firms generates keen competition for available work. But you don't have to search far for evidence that there's a huge potential demand for contractors' services; CONSTRUCTION METHODS' Backlog of Proposed Work now totals a record \$125 billion (CM&E, Jan., p.59).

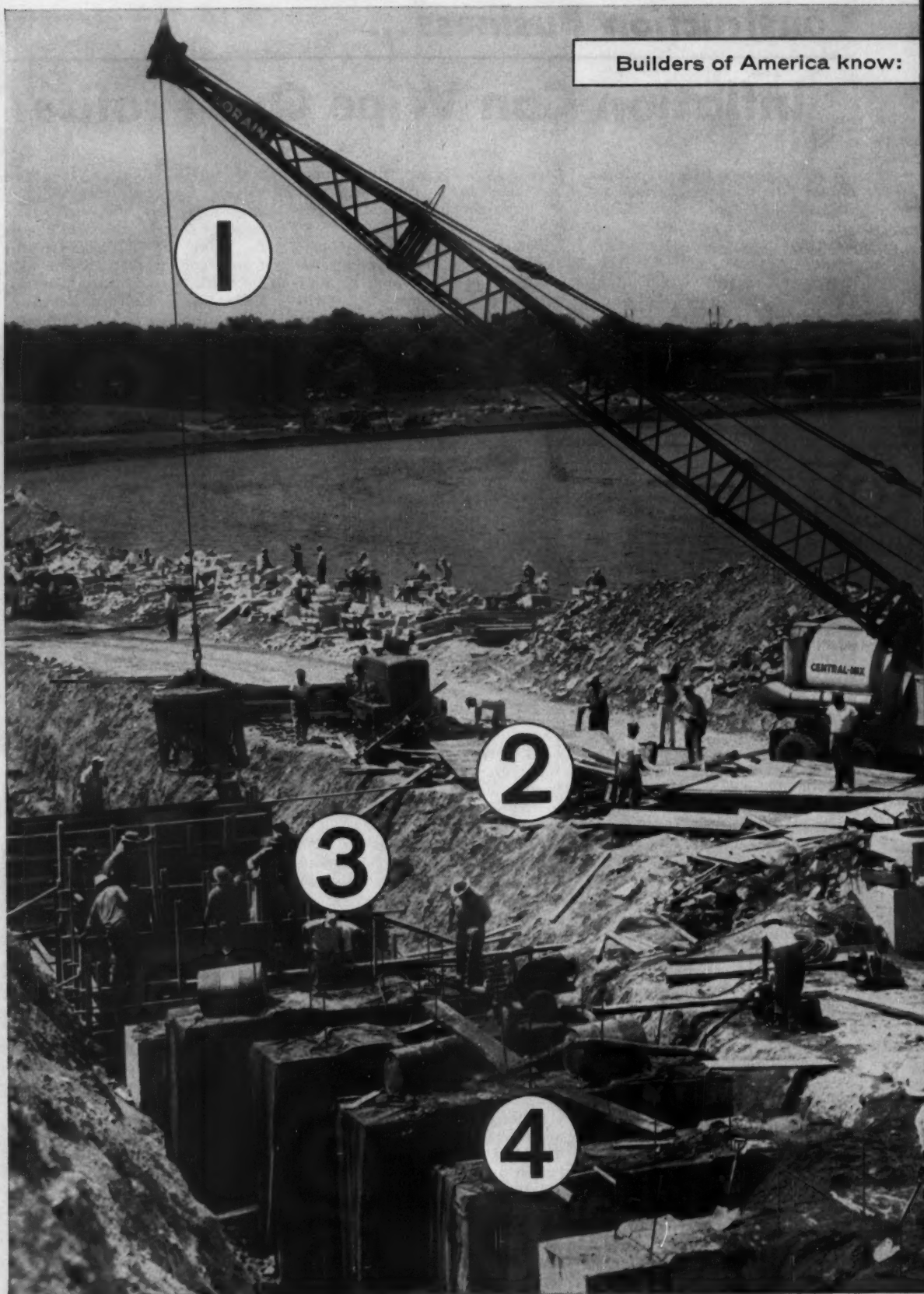
Which types of work should be pushed first? One way of determining the answer is to see which types are being pushed.

It's readily apparent from CONSTRUCTION METHODS figures that these major types of work are on the rise, judging by 1960 contract awards: Waterworks, up 21%; bridges, up 41%; highways, up 17%; airports, up 18%; public housing, up 23%; commercial building (stores, offices, churches, private schools and other private institutional construction), up 18%; and private mass housing, up 23%.

Even public school contracts were on the rise last year, despite integration struggles and the failure of the proposed school construction bill. School contracts were up 3% for the first 10 months of 1960, according to the most recent figures of the Census Bureau. This turnaround in school construction awards probably mirrors the 1958-59 rebound in mass housing. As new developments grew up in suburban areas, new schools were needed. Favorable interest rates encouraged a sharp rise in school bond sales used to raise construction funds. School districts increased bond sales by 32% to a record high.

see chart on page 44

Builders of America know:



When pouring a foundation, think what can happen to schedules if ...

- ① Cable breaks, dropping concrete bucket
- ② Workmen trip on scattered materials
- ③ Form collapses
- ④ Walk planks kick off

Pouring a foundation is the first step on most jobs. And it can be the crucial one. An accident can shatter the routine and cause you to lose men, materials, equipment ... and money.

Combatting accidents is one of your most troublesome jobs, but the experienced advice that AM men can give you can make your accident-control program more effective in saving lives, limbs and materials. And that in turn could mean lower insurance rates, lower operating costs, and a better bidding position on your next job.

Over the years, American Mutual has built up an enviable reputation in the construction industry

and many AM contractor policyholders who have consulted with the AM Safety Engineers have benefited from a lower accident rate and lower insurance costs. Policyholders also valued the improved production and profits which tended to flow from a better accident rate. That's what we mean by *better protection ... lower cost.*

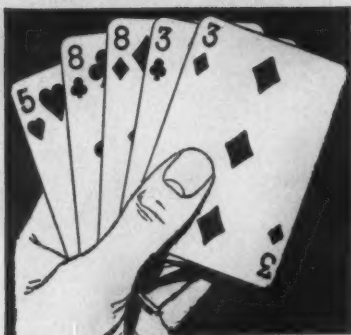
Why not talk to an AM man yourself, and see what he can do for you? Or ask for names of AM policyholders near you (we'll be glad to send them), so you can judge AM people by their actual achievements. Write American Mutual, Dept. CM-2, Wakefield, Massachusetts.

Our business is protecting your business ... better

"The First American Liability Insurance Company" ...
a leading writer of Workmen's Compensation,
all forms of Liability, Crime, Automobile,
Group Accident and Health Insurance.

**American
Mutual** 
LIABILITY INSURANCE COMPANY

POKER? Play to win!



How would you play this hand?

You'll be the high hand before the draw about 3 times out of 5, but the odds are roughly 12 to 1 against helping on the draw. Odds are better than even somebody will beat you. Don't open. Don't call. Tough? Yes, but be patient...and win.

Here's a sure winner from FORD:

Ford pays half your fuel bills for a full six months (or 400 tractor hours) on the purchase of any new Ford or Fordson diesel tractor.

This offer, made possible by the amazing fuel-saving performance of these low-priced diesel tractors, expires March 31, 1961.

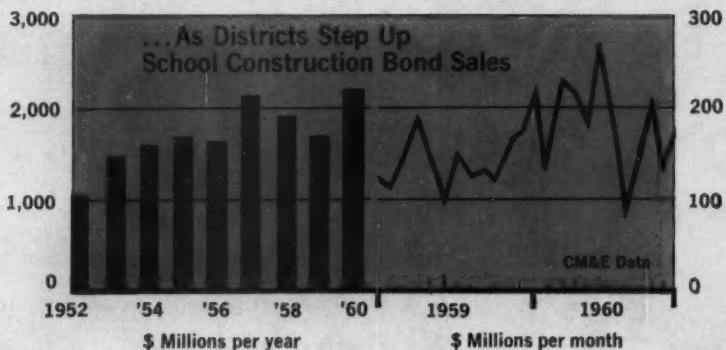
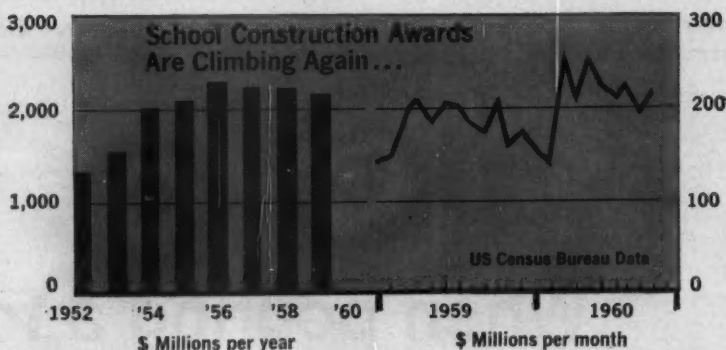
No "hidden" price increase... no tricks of any kind. See your Ford Tractor Dealer for all the money-saving details!

**Tractor and Implement Division,
Ford Motor Company,
Birmingham, Michigan**



Circle 44 on Reader Service Card

CONSTRUCTION BUSINESS . . . continued from page 41



This year should provide another big market for new public schools. The continued rise in mass housing through 1960 and continued favorable rates of interest on school bonds will spur construction.

Contrasted with these relatively strong categories in the construction market are three weak spots: Sewerage, earth-work-dams-waterways, and industrial building. In each of these categories, federal legislation could stimulate the market.

California's huge \$1.75-billion, 10-yr Feather River project alone could give the national market for dams and irrigation enough lift to bring increases this year and in each of the next few years. But more could be done for flood control and other river or harbor development for which federal agencies have the chief responsibility for planning new work.

Sewerage construction needs have continued to mount sharply, but awards wavered in 1960. Lack of financing was the reason for the 1960 slowdown in awards. An expanded federal grant program under Public Law 660 (Pollution Control Act), aimed at financing new sewage treatment facilities, would help lift the rate of awards and gradually close

the wide gap between plans and the actual rate of construction.

In the private sector, industrial building will probably provide contractors with less new work this year than last. One reason for lower contracts, indicated by the recent turnaround in new plans, is that industry's existing capacity leaves a big cushion for handling a large increase in demand above current rates. However, more liberal depreciation laws would stimulate industrial construction three ways: Greater depreciation allowances could make many proposed plant projects practical; overseas locations for proposed new plants would lose some of their allure and American contractors would benefit; businessmen could compete more successfully for business now going to foreign firms.

Contractors have another big stake in depreciation law changes. In addition to stimulating growth of the industrial building market, more liberal depreciation rules would cut the amount of capital tied up per piece of new equipment. Able to write off equipment investments faster, contractors would be encouraged to invest more in the new equipment they need to raise productivity.

continued on page 52

Find out how

EATON 2-SPEED AXLES

CHECK LIST

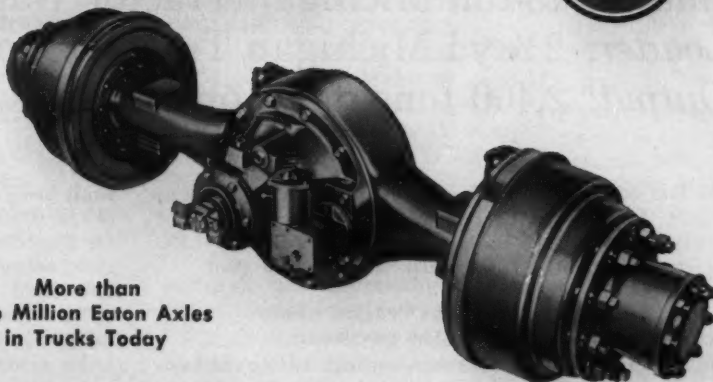
- ☐ Why do Eatons cut operating costs?
- ☐ Why do Eatons cut maintenance costs?
- ☐ Why do Eatons enable trucks to do more work?
- ☐ Why do Eatons make trucks last longer?
- ☐ Why do Eatons make trucks worth more on the trade-in?
- ☐ Why are Eaton 2-Speeds better than other axles?

can save you money!

Probably everybody who owns, operates, or maintains trucks knows that an Eaton 2-Speed Axle doubles the number of gear ratios provided by a conventional transmission—that it gives drivers the *right* ratio for every operating condition.

You may *not* know just how doubling the the number of available gear ratios effects big savings in operating and maintenance costs; enables trucks to make more and quicker full-load trips; cuts wear and tear on engines and all power transmitting units; adds thousands of miles to vehicle life; and makes trucks worth more when traded in.

If trucks are part of your business, you'll want to know *exactly* why Eaton 2-Speed Axles will save you money. Ask your truck dealer to give you the answers.



More than
Two Million Eaton Axles
in Trucks Today

EATON

AXLE DIVISION
MANUFACTURING COMPANY
CLEVELAND 10, OHIO



NEW ROCK LOADING TEAM

Hauler: 13-ton Michigan Tractor Wagon

Loader: 2¾ yd Michigan Tractor Shovel

Output: 2,400 tons daily on 2-mile cycle

Four years ago, the Fort Scott Hydraulic Cement Company, Fort Scott, Kansas began a program to replace their four crawler-loaders and two 10-ton tandem-axle dump trucks with the most modern equipment available.

The program was completed when a 13-ton rear-dump Michigan Tractor Wagon went on the job a year ago. Its addition gave Fort Scott, one of the nation's three major natural cement producers, an all Michigan fleet. The Wagon teams with a 2¾ yd Model 175A Michigan Tractor Shovel in the

rock pit. Three other 2¾ yd Michigan Tractor Shovels handle the crushed rock, coal, and clinkers in this 4,500 barrel-a-day natural cement plant.

Tractor Wagon hauls 120 tons per hour

It's the heavy rock loading and hauling operation that Mr. Pat Thomas, president of the 92-year-old firm, points to as being the best example of how the Michigan machines have improved job efficiency.

Shot Florentine limestone is cur-

rently being loaded out of the far end of a pit 90 feet wide and 5,000 to 6,000 feet long. This makes the average haul cycle, between pit and crusher, about two miles.

The 162 hp Tractor Wagon's stability and speed of up to 31 mph is a prime production factor in the mile long *uphill* run from pit to crusher. With torque converter and full power shift, power and speed are instantly adjusted to match the load demand.

On two 10-hour shifts, the Tractor Wagon, sideboarded to meet rated ca-



Michigan 162 hp Tractor Wagon, with torque converter and power shift providing top speed, barrels uphill to plant.



With hydraulic rear dump, Michigan unloads fast. Quick-interchange feature, Wagon for 10 1/2 yd Scraper, provides added versatility.



In spare time, 13 ton Tractor Wagon takes crushed stone from hopper to stockpile.

BOOSTS PRODUCTION 25%

capacity, and the highly-maneuverable 2 3/4 yd Tractor Shovel will load out an average 2,400 tons of rock . . . rock which weighs, when loose, approximately 2,500 lbs per cu yd.

2 Michigans outwork 3 units formerly used

Production in the rock pit has risen 25% since the Tractor Shovel replaced a crawler rig with similar bucket capacity, and the Tractor Wagon took over the job formerly handled by two 10-ton dump trucks.

When maximum production from the crusher is not a factor, the Tractor Wagon is taken off the shot rock haul and used by itself to build up the crushed rock stockpile, an operation previously handled by two to four random-sized dump trucks.

Compaction has reduced haul road maintenance

An added advantage, according to Mr. Thomas, is the Michigans' compacting action on the haul roads. The 31,500 lb (plus load) Model 110 Tractor Wagon and the 29,000 lb Tractor Shovels have reduced maintenance and actually improved haul road conditions as they travel between pit and plant.

Upkeep "phenomenally small," says president

"With all five of the Michigans working constantly with heavy loads and over sharp rock and abrasive cinders, we have spent less than \$2100 on overhauls, parts, tires and labor during the past three years," says Mr. Thomas. "I think this figure is extremely low considering what a machine goes through

in a cement plant operation of this type. We have had virtually no downtime."

If you're hauling bulky materials off the highway, perhaps a Michigan Tractor Wagon could increase your production, too. When you pair it with one of the eight Michigan Tractor Shovel models (up to 6 cu yds), you've got a team that can't be beat. Let us demonstrate. Just call. There's no obligation, of course.

Michigan is a registered trademark of
CLARK EQUIPMENT COMPANY
Construction Machinery Division

**CLARK
EQUIPMENT**
2403 Pipestone Road
Benton Harbor 13, Michigan
In Canada:
Canadian Clark, Ltd.
St. Thomas, Ontario

Circle 47 on Reader Service Card



All-wheel steering permits exceptional maneuverability

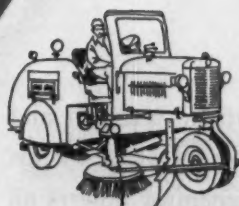
Continuous full circle boom rotation allows work over front, sides or rear

Telescoping hydraulic booms extend up to 48 ft.

AUSTIN-WESTERN PRODUCTS SAVE TIME AND MONEY

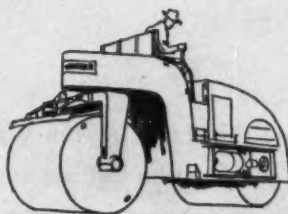
LIFT, CARRY AND PLACE IN AREAS WHERE OTHER CRANES CANNOT WORK

Tight, cramped working quarters and low overhead clearances pose no problem for Austin-Western hydraulic cranes. Because they've got the easy maneuverability of all-wheel steering *plus* long reach and big load capacity. Telescoping booms swing in continuous full circle on most models; extend to maximum 48-ft. length on Model 410. Safe, precise, easy to operate. Rubber-mounted, they work indoors or out equally well—most travel at speeds to 35 mph. A-W owners tell us they're perhaps *the* most useful multi-purpose pieces of equipment you can buy. They do just about everything . . . from plant maintenance or construction equipment repair to materials handling tasks. And they can be even more useful equipped with clamshell, dozer blade, snow plow, magnet, personnel platform, or other attachments. They come in 5 models—capacity ranges up to 11 tons; self-propelled, truck or stationary mountings. Learn just how profitable an A-W would be in your operation. Get facts from our distributor or write us direct.



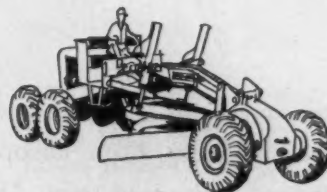
A-W MOTOR SWEEPERS

2 models: 2-yd. Model 40; 4-plus yd. Model 60. Safe, easy front steer; full visibility. Simplified design; broom and hopper in rear.



A-W COMPACTION EQUIPMENT

Variable weight tandem and 3-wheel rollers to 14 tons; 3½-6 ton portable tandem; Roller-Compactor; vibratory attachment for most 3-wheel rollers.



A-W POWER GRADERS

9 models; all-wheel drive and steer 4-wheel Pacers and 6-wheel Supers. Weight classifications to 30,000 lb., power ranges to 165 hp

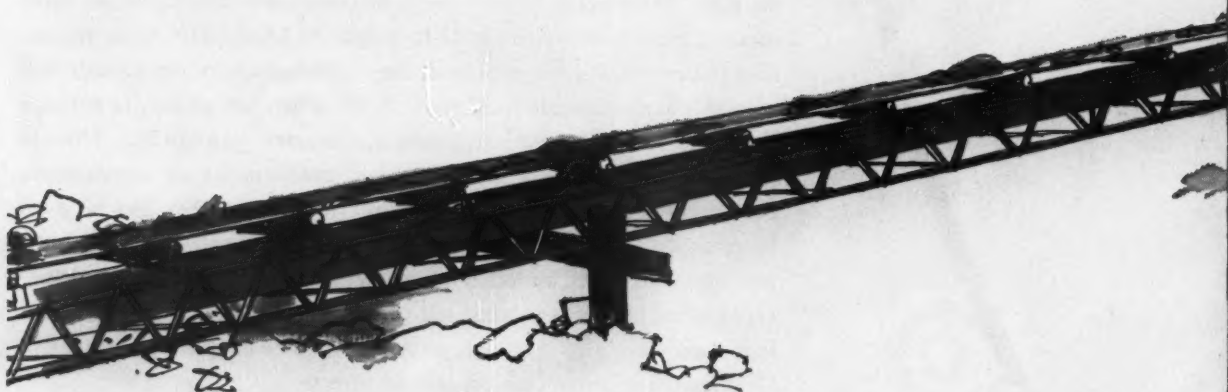
Austin-Western CONSTRUCTION EQUIPMENT DIVISION, AURORA, ILL.
BALDWIN · LIMA · HAMILTON



Circle 49 on Reader Service Card

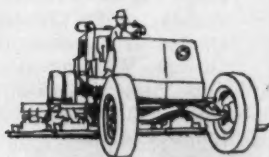
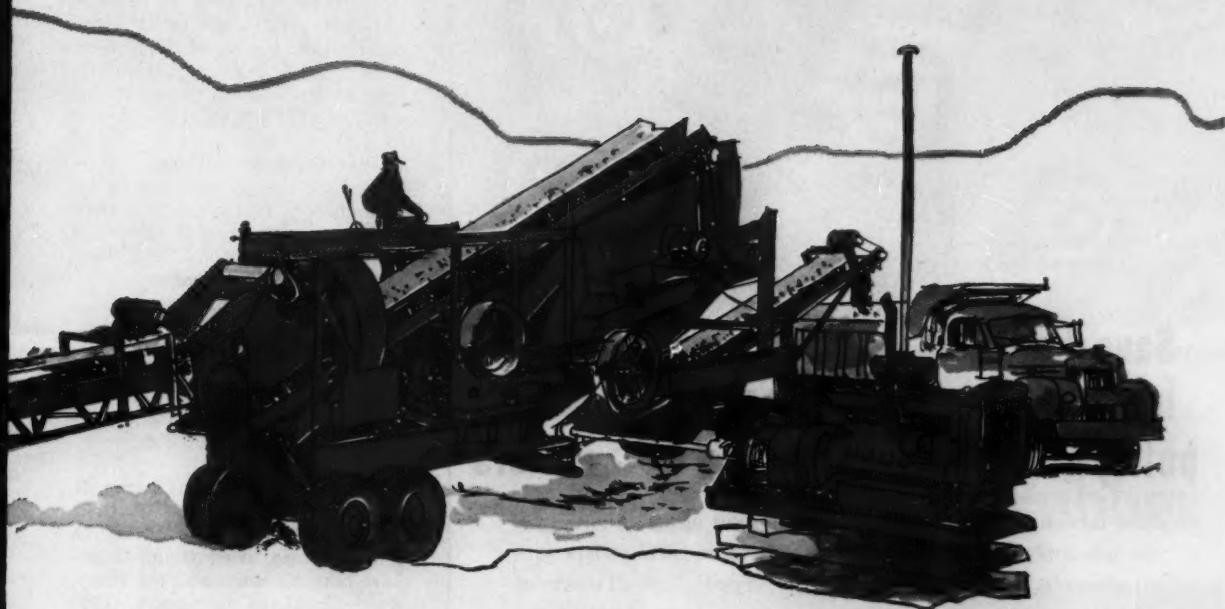
THE USEFULNESS OF A LIMA AUSTIN-WESTERN

ONE MAN RUNS THIS PORTABLE PUSHBUTTON CRUSHING PLANT

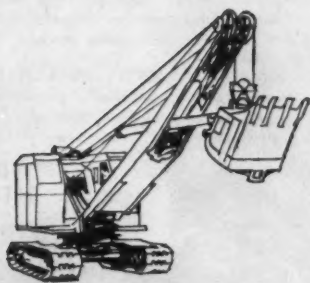


Only one man is required to operate this Lima Austin-Western portable crushing and screening plant. From his operating platform he can see and control every phase of this efficient, high-speed setup. Diesel engine operates crushers; electric generator powers all other operations. Design simplicity eliminates troublesome clutches, chains, sprockets and gearboxes. Maintenance is reduced, tonnage costs are kept down.

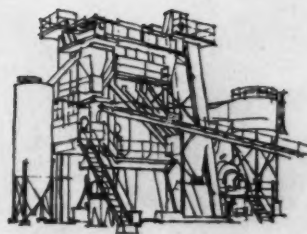
And look at the compactness of this completely portable unit. It's self-contained, rubber mounted—ready to roll from job to job. Works near end-use sites to cut trucking time and costs. Lima Austin-Western offers a full line of portable or stationary crushing, screening and washing equipment, including jaw crushers, roll crushers, feeders, screens, elevators, conveyors and bins. To see it in action, get in touch with our distributor nearest you or write to us for full details.



LIMA MODEL D ROADPACKER
—Six vibrating shoes compact fast and deep for profitable single-course construction; available in 12-shoe Super model.



LIMA SHOVELS AND CRANES
—Interchangeable front ends. Shovels to 8 yd.; cranes to 140 tons on crawlers, 80 tons on rubber; draglines variable.



LIMA MADSEN ASPHALT PLANTS
—available in models with batching capacities from 1000 to 10,000 lb.

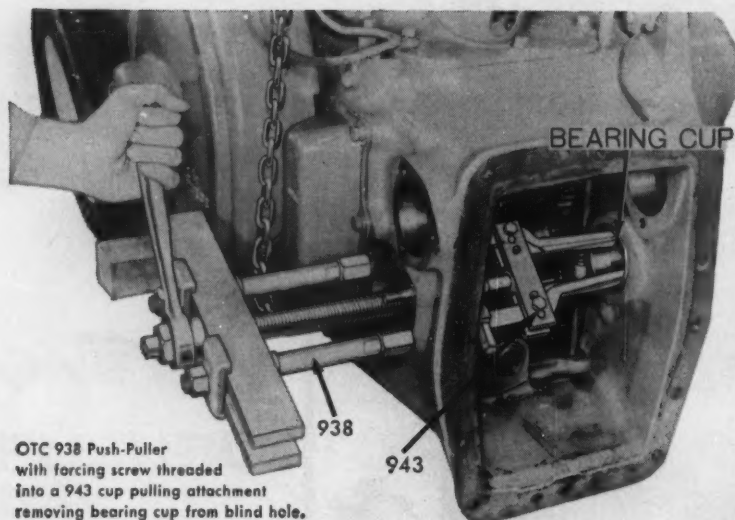
DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA AUSTIN-WESTERN Crushing, Screening and Washing Equipment

BALDWIN · LIMA · HAMILTON

CONSTRUCTION EQUIPMENT DIVISION • LIMA, OHIO





OTC 938 Push-Puller
with forcing screw threaded
into a 943 cup pulling attachment
removing bearing cup from blind hole.

Save time, cut costs in removing and installing cups, bearings, gears, seals, pulleys, etc., with versatile OTC pullers

Save time, up profits by having the right tools in your shop to get the job done quickly, safely, easily — versatile OTC pullers with attachments. Manual or hydraulically operated . . . fit all makes of equipment. Complete hydraulic maintenance sets available in 17½, 30 and 50-ton capacities.



A Pulling rear axle inner bearing cup without damage or distortion to parts with same OTC-Push-Puller unit shown above.

B Removing transmission main shaft front bearing quickly and easily with OTC 1002 Grip-O-Matic puller and 951 bearing pulling attachment.

See your OTC distributor or write for further information.

OWATONNA TOOL COMPANY

380 Cedar Street, Owatonna, Minnesota
Cable Address: TOOLCO

Designers and manufacturers of the world's most complete line of Maintenance Tools and Hydraulic Equipment.

PULLERS AND PULLER SETS • HYDRAULIC PUMP AND PRESS • HYDRAULIC SHOCK PRESS • PUMP TOOLS

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SOME BIG CONTRACT AWARDS OF THE MONTH

Hardaway Contracting Co., Columbus, Ga., **Oman Construction Co., Inc.**, Nashville, Tenn., **R. P. Farnsworth Co., Inc.**, New Orleans, La., and **Wright Contraction Co.**, Columbus, Ga. A joint venture to construct Titan missile launching facilities at Little Rock, Ark. Corps of Engineers, Ballistic Missile Construction Office, 9610 Bellanca Ave., Inglewood, Calif. \$28,695,115.

Lasker-Goldman Corp., New York, N.Y. Erect structures for extension of sewerage treatment plant in Jamaica N.Y. Dept. of Public Works, Room 2200, Municipal Bldg. \$14,150,000.

Huber, Hunt & Nichols, Inc., Indianapolis, Ind. Construct a Space Technology Research Center in Valley Forge, Pa. General Electric Co., 361 River Rd., Schenectady, N.Y. \$14,000,000.

George B. Emery Jr., Charles R. Bennett, Cecil D. Hunter & P. E. Lundberg of Topeka, Kan. A joint venture to construct Capehart housing units at Fort Riley, Kan. Corps of Engineers, 1800 Federal Office Bldg., Kansas City 6, Mo. \$13,621,989.

Crane Construction Co., Chicago, Ill. Construct twin 27-story apartment buildings in Chicago, Ill. John J. Mack, 201 E. Walton St., Chicago. \$13,500,000.

George M. Brewster & Son Corp., Bogota, N.J. Construct interchange at the approach to the George Washington Bridge in Fort Lee, N.J. State Highway Dept., 1035 Parkway Ave., Trenton. \$10,957,307.

O. W. Burke Co., Detroit, Mich. Construct an addition to manufacturing plant in Hamilton, Ohio. Fisher Body Div., General Motors Bldg, Detroit. \$10,000,000.

John W. Cowper Co., Towns- wanda, N.Y. Construct a public library building in Buffalo, N.Y. Board of Supervisors, Library Board, Buffalo. \$6,906,993.

Tully & DiNapoli, Inc., Flushing, N.Y. Construct section of expressway interchange in The Bronx, N.Y. State Dept of Public Works, Albany. \$6,637,704.



As rolling resistance decreases, operator of the 61 hp* International 460 can shift up and "throttle back" to maintain work-

ing speed while saving fuel. Your bigger, more costly power can be kept working more profitably on your earthmoving work.

Power-match your jobs with . . .

Cost-cutting drawbar power on rubber

Only International offers such a wide range of wheel tractor power sizes—allowing you to power-match your jobs and thus trim costs. In the heavy-duty class, for example, you can select from three power ratings: 61, 72.5, and 95 hp*, all with Multi-Range six-cylinder engines . . . gasoline, LP gas, or Diesel.

Multi-Range engine design and Torque Amplifier drive give an infinite range of work and travel speeds from less than one mph to 18 mph. You get bulldog lugging power for slow, heavy pulls. Throttle back and shift up for top fuel economy when the load is light.

An IH Dealer near your job will gladly demonstrate an International® 460, 560, or 660 or any others in the International line of eight sizes 13.4 to 95 hp*. For full-line catalog, write International Harvester Co., Dept. CM2, P. O. Box 7333, Chicago 80, Ill.

**Maximum engine horsepower at standard conditions*



INTERNATIONAL HARVESTER



Self-loading in tough clay and shale, a 95 hp* International 660 heaps this 11-yd elevating scraper in 40 seconds. A combination like this slashes investment and operating costs on short-haul or clean-up work.

Compacting subgrade for a four-lane highway in Iowa, a 72.5 hp* International 560 handled this sheepfoot roller 80 per cent faster than the power formerly used, according to the contractor.





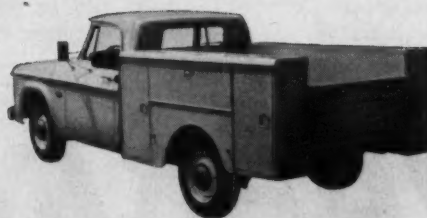
DART PICKUP

NEW FROM DODGE FOR '61

THE FIRST AND ONLY TRUCK WITH COMPACT-ECONOMY



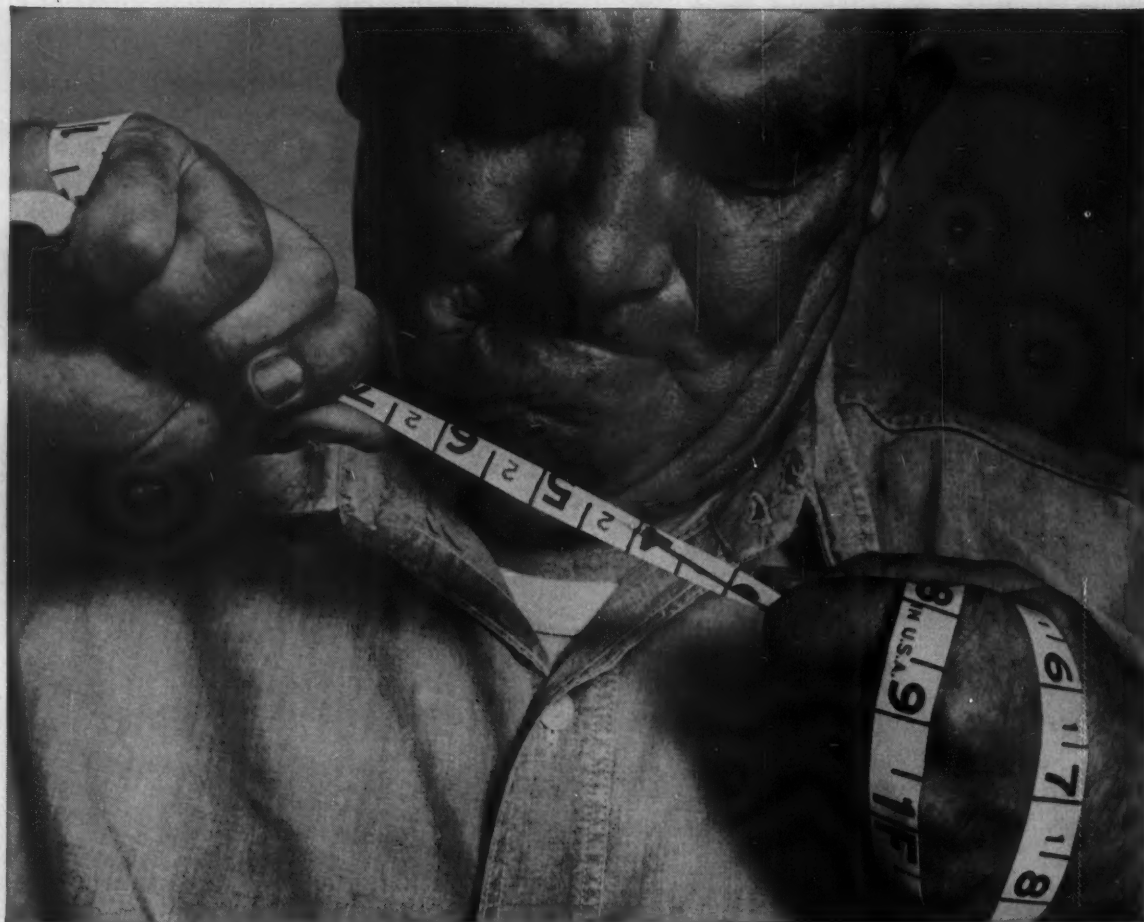
Compact diet. Compact upkeep costs. Compact in everything but work capacity. A full half-ton hauler that'll do the dirty jobs every day, day in and year out. New right down to the wheel studs. New cab. New body. New and easier clutching, shifting, handling. Even a new soft sound. New Dart Power Six, overhead valve, 225-cubic-inch engine that will actually deliver more miles per gallon than Ford and Chevrolet. That's how our tests worked out. And we wouldn't talk about it if you couldn't get the same results. The engine is slanted 30 degrees from the vertical for top-notch manifolding, both intake and exhaust. **THE '61 DODGE LINE?** All Dodge, all tough from end to end. Conventional and cab forward models, four-wheel drive series, Town Wagons for toting men and tools. Six and V8 gasoline power. Cummins diesels. A weight spread of 4300 lbs. GVW to 76,800 lbs. GCW. **PRICE?** The new Dart Pickup and the whole 1961 Dodge line of trucks are priced to compete with every truck coming or going. What more do you want? See your Dodge dealer now!



DODGE TRADESMAN Puts your tools and supplies right where you want them. Vertical and horizontal compartments, with locks, on both sides. Big floor area for your bulky stuff. Offered with all-new Dart Power Six or V-8 power, 2- or 4-wheel drive.

▲ PRODUCT OF CHRYSLER CORPORATION

Circle 55 on Reader Service Card



PULL IT • TWIST IT • TEST IT

You can't hurt Lufkin "Hi-Line" woven tape!

Prove it for yourself! Take Lufkin's Hi-Line tape and use it, *abuse* it, and use it again. It's woven from tough, new, miracle fibers that give you more strength and durability per inch than any other nonmetallic tape!

In addition to sheer strength, the Hi-Line features long-lasting black markings that penetrate deep into the fibers... and *instant* reading (preceding foot number is repeated every inch of the way). Special plastic coating resists abrasion and temperature changes; won't

absorb moisture. And the Lufkin Hi-Line is *heat set* to length, to very close tolerances. Up to 150' lengths.

Here is a long-term investment in dependable service, reeled in a genuine leather case. Now at your local Engineering Supply House.

Measure for measure, the finest made...

LUFKIN

SAGINAW, MICHIGAN



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**PICTURE
OF THE
MONTH**

Steel Dome Tops Out Nuclear Reactor Housing

- A stillleg derrick with 100-ft boom lifts a 28-ton dome into position atop a 50-ft-dia steel cylinder that will house an experimental nuclear reactor at Saxton, Pa. The dome and cylinder rest on a dish-shaped base that was assembled on a platform at ground level, then lowered into a 57-ft-deep excavation by the stillleg. Bethlehem Steel Co., the fabricator and erector, field welded the plate sections that make up the skin of the vessel to insure that it was leakproof. The 100-ft-high structure has a volume of 190,200 cu ft.



ONLY LOADER WITH..

You shift from any one gear to any other—forward or reverse...on-the-go. Allis-Chalmers tractor loaders make fast work far easier for any operator.

It's simple for a tractor loader operator to work faster—get more done. It's just as easy for him to go into a high gear as into a low gear—forward or reverse. ONE LEVER controls both speed and direction. No fumbling around with two or more levers or a combination of levers and foot pedals.

Besides operating simplicity, a tractor loader has *firmly connected axles*—attached to frame with 2-inch diameter steel pins... no rolling and shifting under load. *Extra stability* lets operators get and deliver

Circle 58 on Reader Service Card

move ahead with



.. SINGLE-LEVER SHIFT

bigger loads with greater comfort. Add extra reach for fast, even dumping and you can see why production is higher with an Allis-Chalmers tractor loader. Let your dealer show you. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

The "Big Three" tractor loaders range in size from the TL-14 with 5,300-lb carry capacity to the TL-20 (shown) with 9,000-lb carry. Each has a family of buckets—18 bucket loader combinations in all.

Now available in Persian Orange or Allis-Chalmers Yellow at no extra cost.



ALLIS-CHALMERS



... power for a growing world

ENGINES



MODEL
K161

4-cycle • Short stroke
Air-cooled
Sizes: 4 to 24 H.P.

NEW KOHLER ENGINE AND ELECTRIC PLANT BUILDING



ELECTRIC PLANTS



MODEL 5RM61 • Sizes: 500 watts
to 115 KW, gasoline and diesel

Capacity to meet growing sales

Our customers' requirements will be met better than ever by the 12 acre new factory devoted entirely to the manufacture of engines and electric plants at Kohler, Wisconsin.

The building provides nearly three times the space formerly available, and allows for further expansion. Straight-line, one-floor production and newest equipment mean increased production, prompt deliveries.

Kohler engines, manufactured since 1920, are being increasingly specified for equipment used in agriculture, construction, industry and recreation. Kohler electric plants, known the world

over for reliability, provide efficient electric power for sole supply, portable, automatic standby and marine uses.

Highest standards in meeting your service requirements are assured by service schools at the factory and in the field, where Kohler engineers train representatives of the nation-wide distributor and dealer organization.

The new factory is part of a continuing plan of expansion and diversification by Kohler Co.

Write for illustrated printed matter

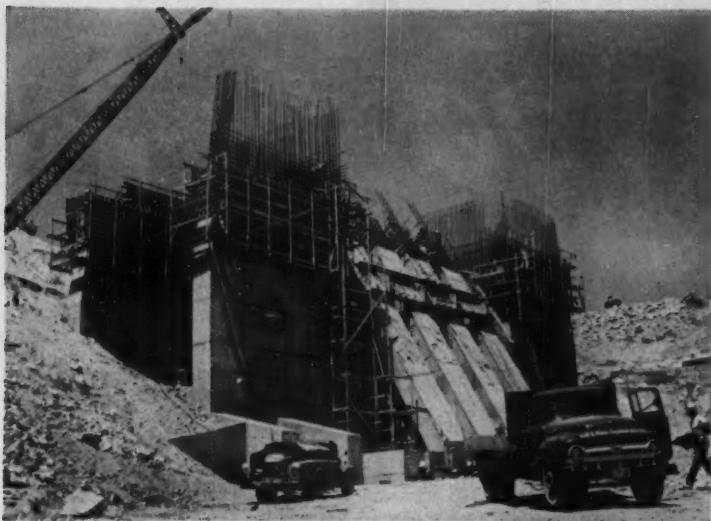
KOHLER Co. Established 1873 KOHLER, WIS.

KOHLER OF KOHLER

ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS • ELECTRIC PLANTS • AIR-COOLED ENGINES • PRECISION CONTROLS
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CONSTRUCTION METHODS

Construction News in Pictures . . .

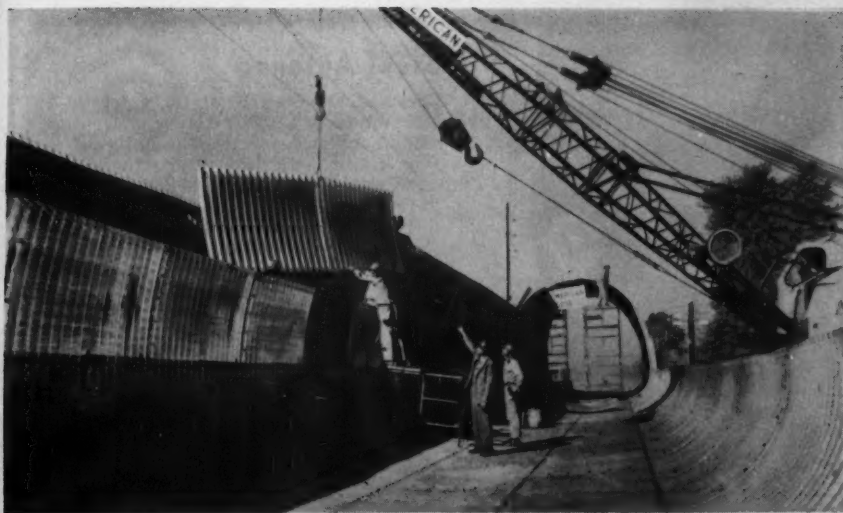
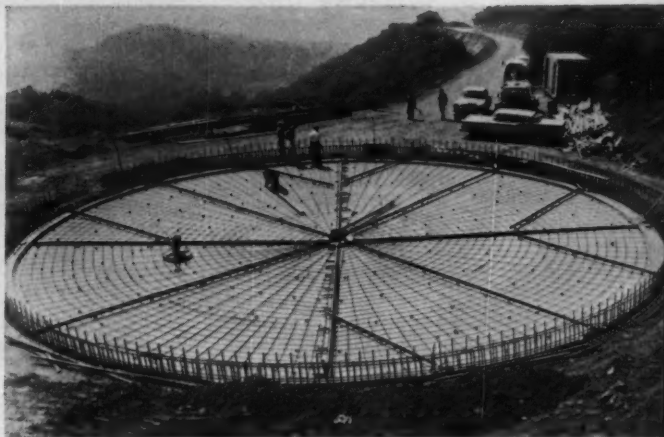


Rocket Progress

Work is ahead of schedule on the nation's biggest rocket test stand at Edwards Air Force Base in Southern California. The Del E. Webb Co. has a \$5-million contract to build the stand. The finished structure will be 221 ft high and will have a 12,000 cu yd concrete base. It is designed to test rockets of up to 1,500,000-lb thrust.

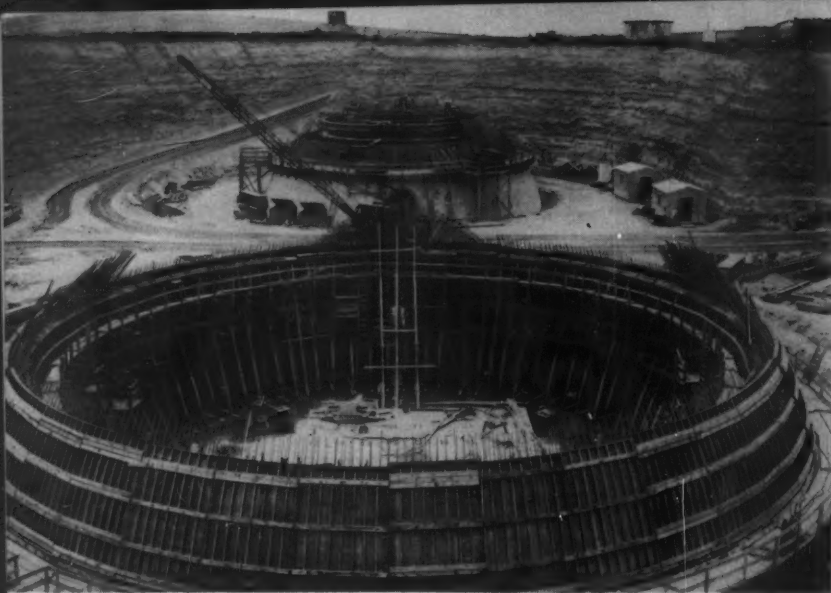
Plastic Sandwich

Koroseal vinyl sheet, supplied by B. F. Goodrich Co., goes into place over a 2-in. concrete pad. Another 4-in. layer of concrete will be poured on top to make a waterproof floor for a 72-ft dia reservoir near La Verne, Calif. The Los Angeles County Engineering Department believes this is the first time vinyl has been used in this way.



Large-Size Pipe

Possibly the biggest pipe-arch structures ever fabricated, this tunnel and another one like it will carry vehicular traffic under Interstate Highway 74 near Morton, Ill. The culvert-type underpass requires much less time to construct than conventional bridge types. The corrugated steel sections were fabricated by the U. S. Steel Corp.



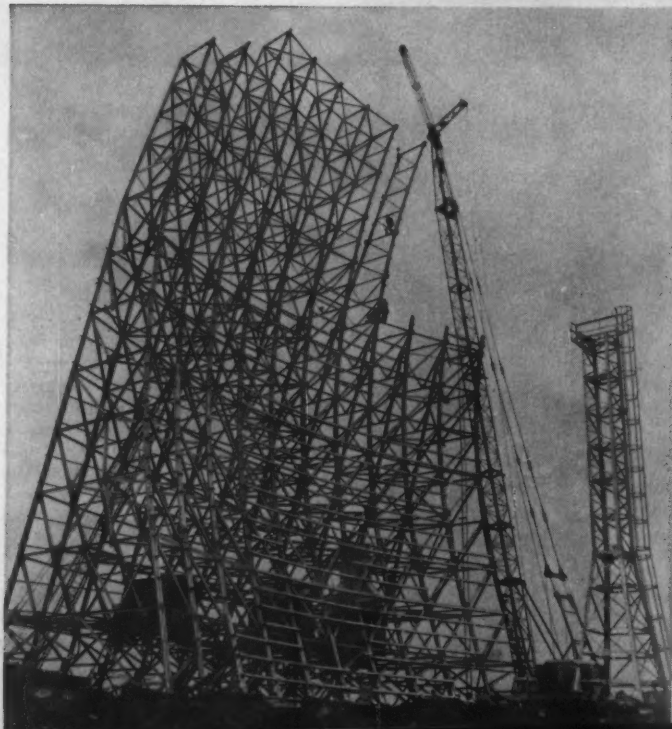
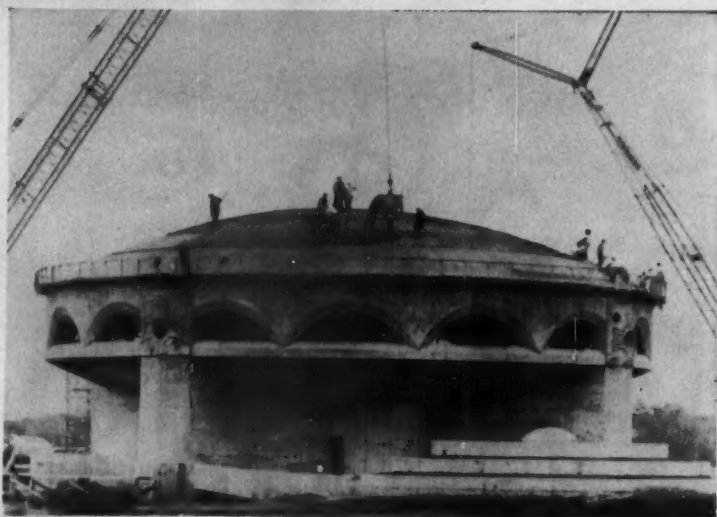
CONSTRUCTION NEWS IN PICTURES . . . *continued*

Deadly Beehives

Two domes of a Titan missile complex take shape at Larson Air Force Base near Royal City, Wash. A big problem on this job was a high water table that put great upward pressure on the foundations. The contractor, MacDonald-Scott and Associates, held them down with 2,500 rock bolts, each 30 ft long and 2½ in. dia, made specially by Bethlehem Steel Co.

Tricky Dome

Crews pour concrete for the dome of a new Greek Orthodox Church in Milwaukee. Designed by the late Frank Lloyd Wright, the dome slab thickness varies from 4 in. at the base to 2½ in. at the crown. Woerfel Corp. supports plywood forms on 4x4-in. timber blocking that is banded to 320 Rex No. 730 Spanall horizontal shoring girders.



Steel Antenna

Crews of the Blaw-Knox Co. erect a prototype of a 120-ft-dia communications antenna for the Air Force near Harmarville, Pa. The structural and operating characteristics of the antenna are being tested before others are shipped to the eastern extension of the DEW line and to sections of the new Ballistic Missile Early Warning System.

MORETRENCH PUMPING BONEDRIES FOUNDATION



54 FEET DEEP

Contractor: W. S. Bellows Const. Corp., Houston

Pumping Contractor: American Dewatering Corp., Houston

A forty-four story office building for the Humble Oil and Refining Company is being constructed in Houston, Texas, on the foundation pictured above.

Because of the great depth, a specially designed Moretrench ejector system, supplemented by a Moretrench Wellpoint System, was used to control 34 feet of water and to relieve the hydrostatic pressure in the underlying strata

below subgrade.

Is every deep job an ejector job? Not by a long shot! An experienced Moretrench engineer can tell you where and when they'll save you money.

When you bring your pumping problems — large or small — to Moretrench, you can be sure of expert advice on the best way to dewater your job profitably. For a *realistic* estimate on working in the dry, call us.

SEND FOR NEW MORETRENCH CATALOG NO. 1000

Moretrench Corporation

389 Main Street
Hackensack, N. J.
HUBbard 9-7676
New York Tel.: CO 7-2283

4900 S. Austin Ave.
Chicago 38, Illinois
PORTsmouth 7-4212

7701 Interbay Blvd.
Tampa 9, Florida
TAMpa 61-1871

315 W. 25th St.
Houston 8, Texas
UNDERwood 4-7774

Rockaway
New Jersey
OAKwood 7-2100

WESTERN REPRESENTATIVE: Andrews Machinery of Washington, Inc., Seattle 4, Washington

CANADIAN REPRESENTATIVE: Geo. W. Crothers Limited, Toronto, Ontario

BRAZILIAN REPRESENTATIVE: Oscar Taves & Co., Ltd., Rio de Janeiro

Save on construction costs with the new '61 FORD TRUCKS

SAVE FROM \$31 TO \$157 ON PRICE* ALONE WITH FORD'S F-100 STYLESIDE PICKUPS

Contractors everywhere are finding that the half-ton Ford Styleside is priced below all other comparable pickups! And these rugged pickups are designed to keep right on saving with lower maintenance and operating expenses. Their durable, one-piece cab-and-box construction provides increased rigidity and eliminates a major source of rust and corrosion. Not only does the sheet metal last longer with this stronger body, but it also contributes to a quieter ride.

And you can save more . . . because you can carry more on every trip. Styleside bodies are longer and wider with loadspace increased as much as 16%. In addition, wheelbases have been lengthened 4 inches and this combined

with the improved shock absorbers gives a ride that's unexcelled in its field—proven by scientific Impact-O-Graph tests. For construction work the angle of approach has been increased so you can climb steeper drives or go over deeper ditches or gullies. Ford also offers America's lowest-priced* 4 x 4 with big 8-ft. box, the F-100 Flareside.

And you can save on operating expense! Ford's Mileage Maker 223 Six is standard on all conventional pickups to keep gas costs low. The economical 292 V-8 is available for jobs requiring extra power. Both engines are equipped with Ford's Full-Flow oil filter that lets you get 4,000 miles between oil changes.

*Based on a comparison of latest available manufacturers' suggested retail delivered prices



◀ Circle 63 on Reader Service Card



SAVE UP TO \$150 ON FRONT TIRES! In certified tests of truck suspensions, Ford front tires lasted up to twice as long. In 50,000 miles, savings can add up to \$150 on a pickup . . . more on two-tonners. And Ford's sturdy I-Beam front axle and leaf-spring suspension not only cut tire wear, but their simpler design also cuts maintenance costs.

12,000 MILE OR 12 MONTH WARRANTY

SAVE WITH GREATER DURABILITY . . . on all 1961 Ford Trucks, each part, except tires and tubes, is now warranted by your dealer against defects in material and workmanship for 12 months or 12,000 miles, whichever occurs first. The warranty does not apply, of course, to normal maintenance service and to the replacement in normal maintenance of parts such as filters, spark plugs and ignition points. Never before have you had such protection . . . such evidence of long-term economy!

SAVE WITH FORD'S NEW 262-CU. IN. "BIG SIX" ALL-TRUCK ENGINE FOR TOP PERFORMANCE AND ECONOMY

America's savingest two-tonners offer a big 262 Six with the power of big displacement, the gas economy of 6-cylinder design, plus the durability of heavy-duty construction. This engine features a sturdy stress-relieved block, strong forged steel crankshaft, long-lasting stellite-faced intake and exhaust valves, and durable pyramid-type connecting rods. And Positive Crankcase Ventilation reduces oil dilution and sludge formation to extend engine life. Ford's proven 292 V-8 and 292 HD V-8—the V-8's with "six-like" economy—are also available for your special power needs.

You also save with other new durability features like the more rugged frame, stronger radiator with new lock-seam construction, improved cab and chassis electrical wiring, plus longer, easier-riding and more durable rear springs. Ford's parallel ladder-type frame with standard 34-inch width allows you to install new or transfer your present special construction bodies quicker and for less. Also, the frame drop in the cab area lowers cab height . . . makes for easier entry.

NEWS OF MORE SAVINGS FOR HEAVY CONSTRUCTION WORK . . . ►

Save on construction costs with the new '61 FORD TRUCKS

FORD HEAVIES SAVE WITH DOUBLE THE CAB, SHEET METAL AND RADIATOR LIFE

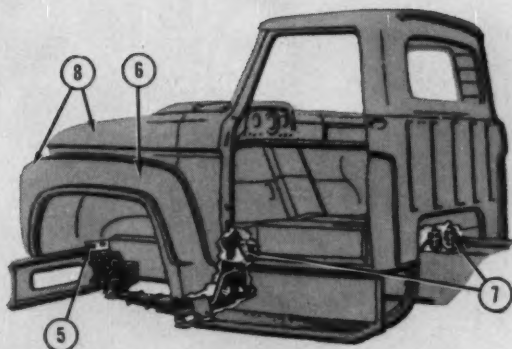
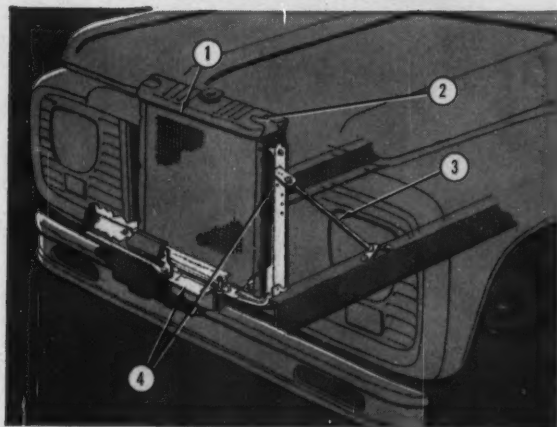
Ford F-Series Heavy Duty models are especially designed for the rugged terrain and tough conditions generally found on construction jobs. Their new independent mounting system for cab and radiator effectively separates both from adjacent sheet metal assemblies for much greater durability. And radius rod-leaf type rear springs provide better axle alignment, a smoother ride and longer spring life.

The electrical wiring system has been improved for greater reliability. Chassis wiring is fastened within the protection of the frame web, away from mud, ice and snow. And Ford Truck frames have been engineered to make the mounting of bodies and special equipment easier. A new 212-inch wheelbase model is available to accommodate extra-long bodies.

Save with Ford T-Series Heavy Duty Tandems for exceptional durability, big payloads and low operating expenses. Ford T-700, T-750 and T-800 Tandems have rugged double-channel frames that are built to take tortuous off-road treatment. And they provide a wider range of chassis options so you can choose the right power train and load-carrying components for any job. Eaton and Timken rear axles are now available in bogie assemblies with 22,000-, 28,000-, 30,000- and 34,000-lb. capacities. And lightweight aluminum walking beams, wheels and gas tanks are available to keep chassis weights low . . . payloads high.

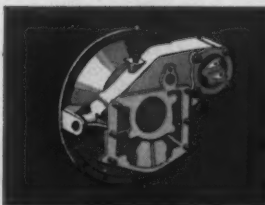
Ask your Ford Dealer about Ford's full tandem line . . . including Super Duties with 38,000-lb. bogies for up to 51,000-lb. GVW!





- ① **Save with Ford's exclusive "lock-seam" radiator construction** that doubles the solder area at key seams for greatly increased strength and longer radiator life.
- ② **Save with heavier-gauge metal on radiator tank and header.** Tanks and header have thicker walls to resist vibration, jolts and corrosion for greater reliability.
- ③ **Save with independent radiator mountings,** separate from front-end sheet metal. This means that road shocks and shakes are not transmitted to the radiator through sheet metal . . . tanks, tubes and connections last longer, require less maintenance.
- ④ **Save with "horse collar" mounting** for extended radiator life. This new mounting on resilient rubber at the center of frame cross member soaks up any frame flexing . . . cuts wear and tear on entire cooling system.
- ⑤ **Save with independent fender mountings.** Fenders are bolted to a rubber-cushioned transverse bracket at the front and a frame-mounted bracket at the rear. This mounting, independent of both cab and radiator, eliminates stress transfers for increased fender life.

- ⑥ **Save with removable fenders.** The quick and easy removal of only 8 bolts per fender provides faster service accessibility to the engine area, saving valuable maintenance time.
- ⑦ **Save with new 3-point cab mounting system** for greater cab durability. Two outboard front mounts plus a centered "twin" rear mount provide a triangular system that holds the cab stationary while allowing the frame to move independently . . . reducing strain on the cab.
- ⑧ **Save with 42% heavier-gauge sheet metal** in fenders, hood, cab floor pan and toeboard for greater strength, greater durability.



Save with Ford's new Full-Torque flywheel power take-off . . . now available on T-750's and up, to power construction equipment like transit mixers. It's much simpler and more efficient than long, complicated hookups needed with the front-end drives. And the flywheel PTO is lighter in weight—only 105 pounds—for greater payloads.

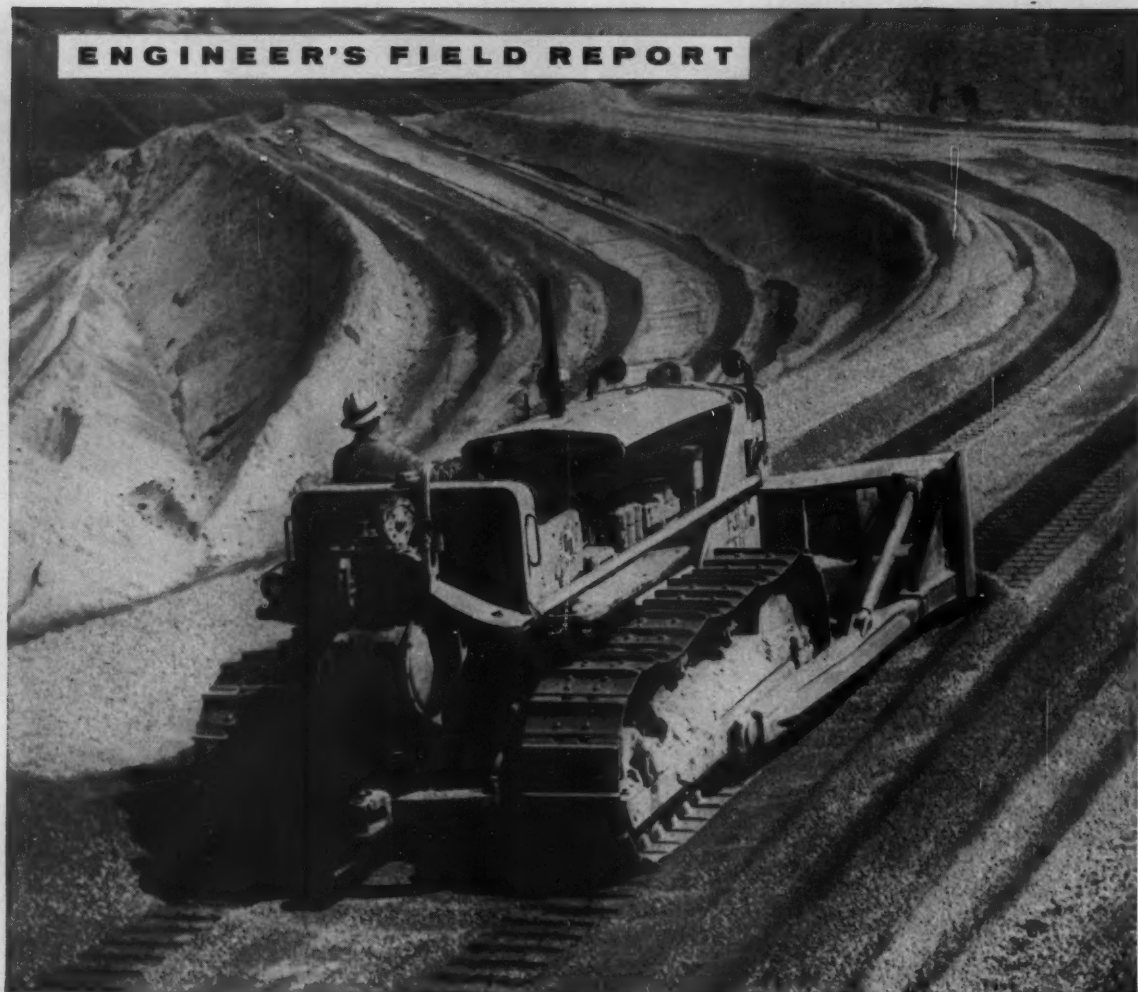
FORD TRUCKS COST LESS

YOUR FORD DEALER'S "CERTIFIED ECONOMY BOOK" PROVES IT FOR SURE...

FORD DIVISION, *Ford Motor Company*.



ENGINEER'S FIELD REPORT



No lost time—No replacement parts with RPM Tractor Roller Lubricant!

Tractor equipment of Gibbons & Reed Construction Co., Salt Lake City, operates in extreme heat, cold, dust and moisture. Yet, despite severe working conditions, track rollers and bearings have given remarkable service using RPM Tractor Roller Lubricant.

"We've used 'RPM' for over 10 years," reports Master Mechanic Harold Higgins. "... it has done a fine job, and we've definitely saved on replacement parts. This lubricant seals out dust and moisture to keep bushings in good shape.

We use RPM Tractor Roller Lubricant on over 60 pieces of heavy construction equipment."

Gibbons & Reed is one of Utah's top general contractors with construction jobs throughout Western states. Their maintenance policies are the result of over 25 years field experience. As Harold Higgins says: "You can't meet schedules when equipment is down... that's why we rely on 'RPM' to help keep 'em rolling!"

RPM Tractor Roller Lubricant resist wear because it flows evenly to all bearing surfaces, lubricates and retards rust formation. Its special compounds create a tough, wear-resistant film that seals out moisture and dirt.

Why not try RPM Tractor Roller Lubricant? Chances are it can help reduce down time, lengthen equipment life for you. Just call your local representative or write any company listed below:



STANDARD OIL COMPANY OF CALIFORNIA, San Francisco 20 • STANDARD OIL COMPANY OF TEXAS, El Paso
CALIFORNIA OIL COMPANY, Perth Amboy, New Jersey • Denver, Colorado

TRADEMARK "RPM" AND CHEVRON DESIGN REG. U.S. PAT. OFF.

Circle 68 on Reader Service Card

CONSTRUCTION METHODS

Construction 'Round the World

In Guinea

A modern bulk cargo-loading terminal to serve the \$150-million FRIA bauxite mining project rises in the harbor of Conakry. A P&H crawler crane erects steel for two gantry cranes (in foreground and at center) and an unloading conveyor bridge (left). Olin Mathieson Chemical Corp. and five European partners sponsored project.



In Australia

Working from the top deck of a three-level jumbo, workmen drill blast holes 12 to 14 ft deep in the face of one of the headrace tunnels of the Snowy Mountains Scheme. This part of the project is being built by a joint venture sponsored by Kaiser Engineers and including Perini, Morrison-Knudsen, R.C.P. Construction, and Bates & Rogers.

In Canada

Three Manitowoc cranes team up to unload and erect steel for the Hoggs Hollow Bridge at Toronto, Ontario. A model 3000 (in the foreground) owned by Standard Steel Construction Co. unloads steel beams from a trailer while two 3900's owned by Aldershot Equipment Co. erect the members. The new bridge will provide four lanes.

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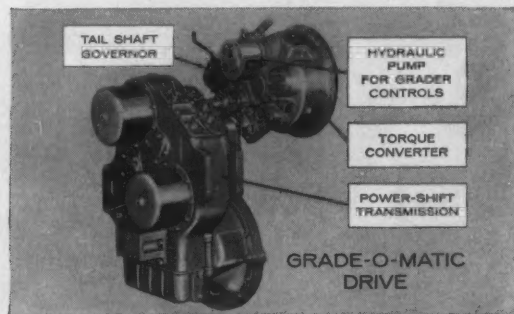


You're miles ahead in performance with GALION GRADERS on the job. They're built to put more **WORKPOWER** at the blade

HUSKIEST GRADERS BUILT. You get strength to spare from Galion's extra-rugged frame. It's engineered for low-maintenance operation . . . for extra years of cost-cutting performance.

MORE "PUSH-POWER." Full working capacity results from the careful weight-to-horsepower balance built into Galion graders. You get more "push-power" at the blade. That's where power counts most.

EXCLUSIVE GALION DESIGN teams up with heavy-duty engine, rugged transmission, power-booster steering and centralized controls to speed operation. Result is a bigger day's work with less fatigue.



GRADE-O-MATIC DRIVE—THE ULTIMATE in efficient grader operation. It combines torque converter drive, power-shift transmission and tail-shaft governor to provide fully automatic power application.

TORQUE IS MULTIPLIED automatically. Meets varying power needs without constant shifting. Grade-O-Matic operators are free to concentrate on more efficient blade work on every job.



For information on graders from 58 to 220 hp., and weighing up to 42,000 lbs., contact your Galion distributor or write for latest catalog data. The Galion Iron Works & Mfg. Company, Galion, Ohio, U.S.A.

THE GALION IRON WORKS & MFG. COMPANY, GALION, OHIO, U.S.A.



General and Export Offices, Galion, Ohio, U.S.A.—Cable Address, GALIONIRON, Galion, Ohio
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GALION®
ROLLERS AND GRADERS

**MILES
AHEAD**



CONSTRUCTION 'ROUND THE WORLD... *continued*

In Canada

A 65-ton Lorain crane with a 120-ft boom and 20-ft jib lifts a 17-ton steel truss section into place for a bridge across the Bay of Chaleur. The crane's turntable is mounted on a special carriage that rides on rails along falsework-supported deck girders. Canadian Bridge Works, the contractor, used two such cranes.



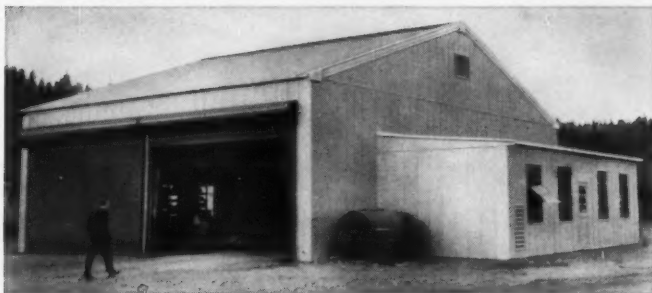
In Colombia

A big blast goes off in a 125-ft-deep cut during the construction of the Cucuta-Zulia section of the Santander Highway project on the outskirts of the city of Cucuta. The deep cut is typical of many on the project, which is being built by the Colombian affiliate of Morrison-Knudsen. The new roadbed will be nearly 60 ft wide.



In Great Britain

While two English engineers look on, Lima 1201 and 2400 cranes drive prestressed concrete cylinder pilings for the Thelwall viaduct. A joint venture of Raymond International and West's Piling & Construction Co. is employing Raymond's method of wet rotary pre-excavation to penetrate a dense sand layer 50 to 60 ft deep.



MAINTENANCE BUILDING At Frenchman's Dam of the Feather River Water Project, California, this Armco maintenance building is used by the Isbell Construction Co.

For Offices or Construction Tools...

New Armco Steel Buildings Offer You More Value



OFFICE This attractive Armco Building serves as an office for Shaver Construction Co. of Winnipeg, Manitoba. Note inexpensive entrance and masonry veneer wall.

Armco's new line of buildings can be as attractive or as functional as you wish — at low cost. Check these **NEW** highlights: new series of single-slope roof buildings; new choice of gable roof designs (2:12 and 4:12 pitch); wider spans (up to 120 ft.); new wall panels with handsome sculptured effect; and new insulated interior wall panels.



As offices and shops, Armco Buildings give you permanence. Yet, at construction sites, you will like the ease of dismantling these buildings for complete salvage and re-use. For complete details, write us for a copy of the "Armco Building Catalog," Armco Drainage & Metal Products, Inc., 4321 Curtis Street, Middletown, Ohio.

ARMCO Drainage & Metal Products

EXPLOSIVES



ENERGY...

vs. Mechanical Energy

Cheaper blasting materials and improved drilling equipment have reduced the cost of explosives energy to the point where it is doing work formerly reserved for mechanical equipment. By putting more of this low-cost explosives energy to work, machinery operates more efficiently, costs are lowered all along the line.

Smart, profit-minded operators are taking a closer look at the cost of mechanical energy vs. explosives energy and they are coming up with important savings in machinery, manpower, and time—for example:

In coal stripping, explosives force is used to move up to 50% of the overburden directly on to the spoil pile. Mechanical handling costs are reduced, and coal is uncovered more rapidly.

In open pit ore mining, explosives factors are being designed to gain additional fragmentation. Much of the material by-passes the primary crusher. Production is speeded, overall costs lowered.

In quarrying and construction, operators are finding it no longer pays to blast rock just hard enough for equipment to handle it. They are taking advantage of lower drilling and blasting costs to gain more fragmentation and displacement. And in the process they are making important savings in wear on crushers, dipper teeth, wire rope, and truck bodies. They

are reducing operating costs, eliminating production delays.

The economics of drilling and blasting have changed. Looking for ways to reduce blasting costs alone is not enough. The real savings come when you look at explosives energy as a way to reduce overall operating costs.

For a closer look at some of the ways explosives energy can lower your costs all along the line, look to Atlas' full line—the only full line in the industry. Expanded plant facilities are now in production at Joplin, Missouri to assure ready availability of all products. And to give you faster, more flexible local service, new distribution facilities are being established coast to coast. Call in your Atlas Representative. His experience with the newest advances in explosives, blasting agents, and blasting techniques can help you measure the relative economy of explosives energy vs. mechanical energy in your operation.

ATLAS POWDER COMPANY
Explosives Division • Wilmington, Del.



ATLAS EXPLOSIVES

← Using explosives energy to cast overburden to spoil pile at a large Midwest coal stripping.



*Speedy Cycles and
Superior Stability.....*

Two important reasons why...

UNIT gives you more Earning Power on dragline jobs

You'll find two essentials of profitable dragline service combined in a UNIT — speedy operating cycles, through full use of power, and outstanding stability. You save power and gain speed with UNIT direct-in-line drive from engine to main machinery. Power is transmitted through a worm drive with minimum loss due to friction. This is one of many UNIT built-in values that pay off in greater job output.

UNIT extra long crawlers and wider axles and shoes provide perfect balance, too. Stability is superior . . . you can work faster without continuous tipping on long or low boom work.

A UNIT DRAGLINE gives you these two important advantages . . . and many more. You get a one-piece cast main machinery gear case with all gears, shafts, and bearings operating in an oil bath; automatic traction brakes; twin hook rollers; and all disc-type operating clutches.

Your UNIT dealer has full information on $\frac{1}{2}$ to $\frac{3}{4}$ -yd. draglines, fully convertible to other front ends. See him soon for the full UNIT story.



SHOVELS: $\frac{1}{2}$ to $\frac{3}{4}$ YDS. • **HOES:** $\frac{1}{2}$ to $\frac{3}{4}$ YDS. • **CRANES:** $5\frac{1}{2}$ to 40 TONS • **DRAGLINES:** $\frac{1}{2}$ to $\frac{3}{4}$ YDS.

▲ Circle 76 on Reader Service Card

Circle 77 on Reader Service Card ►

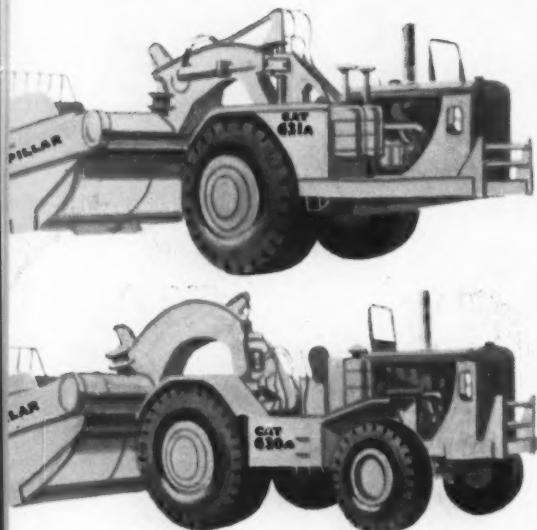
CONSTRUCTION METHODS



BIG! POWERFUL! **NEW CAT 630 AND 631!**

A new concept in power shift transmission coupled with a new 420 HP engine...

plus other new developments... provides the last word in operating, service and maintenance ease and economy. The four-wheel 630 and two-wheel 631 join the widely accepted DW20, DW21 and 619 to give you an even broader choice of wheel tractor-scrapers from Caterpillar. For more facts, see the following pages. For complete proof on your job, ask your Caterpillar Dealer!



New CAT 630 and 631

Now power is put to real work with a combination of new concept in power shift transmission and all-new engine—designed and teamed to fit the power to working conditions. This tailored power train, together with unit construction, greater scraper capacity, air-actuated cable control, and new tires makes the 630 and 631 the ultimate in wheel tractor-scraper design!

POWER SHIFT TRANSMISSION

9 speeds with just 3 shifts. This new concept in power shift transmission automatically adjusts the machine to job conditions. Key to this system is a unit mounted directly behind the engine, which combines a planetary gear set with a torque converter so as to provide power to the three speed-range transmission on the rear of the main frame, in one of three ways: (a) torque divider drive (a combination of 75% direct, 25% torque converter); (b) direct drive; (c) overdrive. Result: nine different speed variations—but the operator need only concern himself with the three speed ranges controlled by his one lever. (A safety latch prevents accidental engagement.) The rest is completely automatic, governed by a simple mechanical-hydraulic system. Here's how it works:

Operator moves the lever to position *I*, first range, to start the machine down haul road. The machine is now in torque divider drive for easy start and greatest rimpull. As speed increases, converter is no longer required, so the transmission shifts *automatically* to direct drive. When haul conditions

permit, the transmission automatically shifts to overdrive.

As speed increases, the shift indicator dial shows operator when to shift to second speed range, 2. Again the transmission automatically goes into torque divider drive and smoothly picks up the load. As before, when conditions permit, it automatically shifts to direct drive and then to overdrive. This same cycle can be repeated in third range.

Downshifting is automatic too. As transmission senses increasing power needs, it shifts down from overdrive to direct drive to torque divider drive. When conditions require it, the indicator will tell operator when to select the next lower speed range.

Once back in the cut, operator shifts to load position, *L*. This locks the transmission in torque divider drive of the first speed range.

That's Caterpillar's new concept in power shift transmission, designed specifically for these new machines... designed to make them more efficient by making the operator's job easier.

ALL-NEW 420 HP CAT ENGINE TAILORED TO POWER NEEDS

Designed for the 630 and 631, this six-cylinder, 5.4" bore x 6.5" stroke D343 Engine is turbocharged and aftercooled. It develops 420 HP maximum (335 HP at the flywheel).

Typical of the newness is head design. The engine is parallel ported with dual intake and exhaust valves for most efficient air system. The overhead camshafts eliminate rocker arms and push rods. And the new shelf head design results

in fast coolant circulation for outstanding heat dissipation.

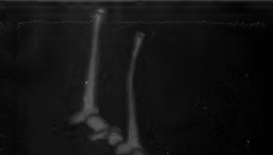
Besides these and other new features, the engine offers the economies of the proven Cat fuel system with precombustion chamber... burns No. 2 fuel oil—premium diesel fuel not required... pressure ratio controlled turbocharger for optimum air flow throughout the engine operating range... after-cooler for greater air density for more complete combustion.

New 29.5 x 35 Tires. This all-new tire size was originally developed for the 630 and 631, to provide the best combination of size, capacity and rideability at the lowest cost per yard. These tires were job-proven by tough tests.

New Scrapers. Matching 28 cu. yd. heaped (21 cu. yd. struck) scrapers feature increased capacity, better loading. Sheave bearings now have 125-hour lubrication period. Other trailed units are also available.

New Cable Control. Live power provides control whenever the engine is running. Air-actuated controls cut operator effort in half, retain "feel" of control. Improved cable savers prevent breakage due to double-blocking.

Improved Steering. New two-jack steering makes the 631 easy to maneuver, yet retains "feel" of the road. Improved steering for the 630 absorbs shocks outside the steering gear, provides easier handling in tight quarters.



match power to job conditions—automatically!

3 SHIFTS—9 SPEEDS



FULL UNIT CONSTRUCTION—EASIER SERVICING

Transmission Units. Range transmission is case mounted for accessibility, can be removed as a unit with cable control and differential carrier. Another timesaver: torque divider transmission is removable as a unit without disturbing the engine. Transmission control units are accessible without disturbing the transmissions.

New Radiator-Fan Unit. Fan is shroud-mounted on the radiator for more efficient cooling. Now radiator, side plates and fan can be removed as a unit for servicing—or to provide easy access to the front of the engine.

Servicing Timesavers. Dash swings to expose side of 631's engine. Crankcase guard pivots for access to bottom of engine. For easy tire removal, fenders tip forward on 630, are easily removable on 631.



CAT WHEEL TRACTOR-SCRAPERS MATCH THE JOB!



High producers on adverse grades, soft going and close quarters

NEW 631

420 HP (Maximum Output)
Power Shift Transmission
31.2 MPH
28 cu. yd. heaped
(21 cu. yd. struck)

DW21

345 HP (Maximum Output)
5-speed Constant Mesh Transmission
22.6 MPH
27 cu. yd. heaped
(19.5 cu. yd. struck)

619

225 HP (Maximum Output)
6-speed Constant Mesh Transmission
30.2 MPH
18 cu. yd. heaped
(14 cu. yd. struck)



High producers on long hauls

NEW 630

420 HP (Maximum Output)
Power Shift Transmission
41.5 MPH
28 cu. yd. heaped
(21 cu. yd. struck)

Optional 482 Series C Scraper
35 cu. yd. heaped
(27 cu. yd. struck)

DW20

345 HP (Maximum Output)
10-speed Constant Mesh Transmission
35.8 MPH
27 cu. yd. heaped
(19.5 cu. yd. struck)

For more complete information about new Cat Wheel Tractor Scrapers, ask your Caterpillar Dealer.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U.S.A.

CATERPILLAR

ADVANCED AS TOMORROW
—CERTAIN AS YESTERDAY

Low Bids Subsidize Highways

TWO REPORTS recently submitted to our lawmakers in the Capitol are of vital interest to the construction industry. Both deal with highway problems.

The first was submitted at the request of the Senate Commerce Committee by a special task force headed by transportation expert John P. Doyle. Among other things, the report called for establishment of a Department of Transportation headed by a secretary with cabinet status. And it also recommended that a Federal Transportation Commission be set up. This would have top-level cognizance over interstate commerce, civil aviation, and maritime affairs.

But some of the Doyle report's most interesting reading for roadbuilders deals with highway financing. Main items:

- The Highway Trust Fund should not be tapped for highway features not required for general public use. Cost of raising the clearance of Interstate System bridges at the insistence of the Defense Department, for example, should be borne by Defense's budget.
- The government should be required to pay fuel and other excise taxes for its cars and trucks, just as a private owner must.
- Under no condition should highway user taxes be diverted from the Highway Trust Fund. On the other hand, fuel taxes from airplanes and pleasure boats should not go into the Fund.

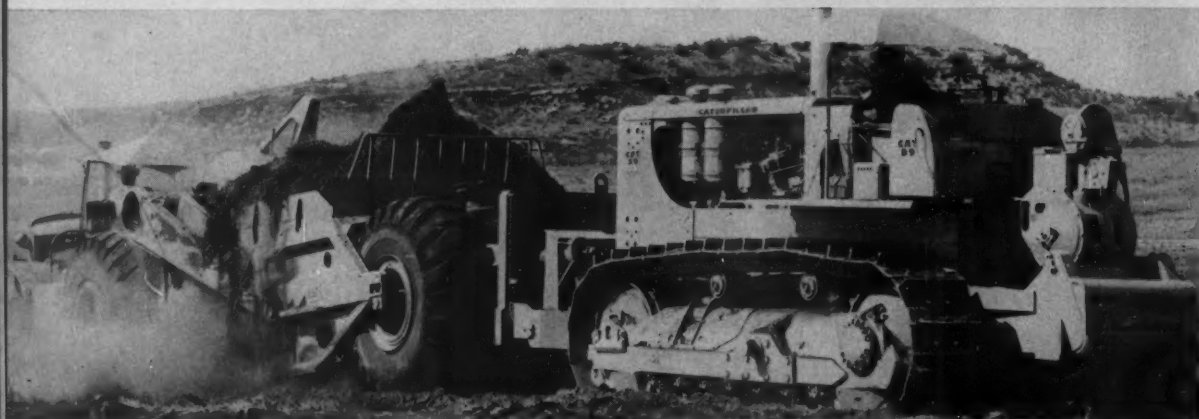
Also dealing with highway financing was the second report—a revised estimate of the cost of completing the Interstate Highway System. It was delivered to Congress by Eisenhower's Secretary of Commerce, Frederick H. Mueller. Prepared by the Bureau of Public Roads, the report indicates no change from the \$41-billion estimate made in 1958. It does, however, show some internal changes.

The 1958 total did not include funds for planning and research by either the federal government or state highway departments. The current figure now includes \$931 million for that purpose. But because the cost of building highways has dropped, there is no change in the \$41-billion total.

The contractor can look at the nearly \$1-billion saving in construction costs with mixed emotions. As a taxpayer he can be pleased. As a builder he can be proud of the accomplishment. But as a businessman he can read into the lowered prices the fierce competition that has prevailed throughout the industry.

Roadbuilders, in the face of rising prices everywhere else, are giving the public the best value it has ever received for its highway dollar. That this cannot long continue is attested to by the rise in contractor failures.

So, be smart. Know your cost of doing business, and bid your costs plus a reasonable profit. It's not your job to subsidize the highway program with profitless bid figures.



EARTHMOVING—Equipment is working 20 hr a day to move 21,000,000 yd of material for Twin Buttes Dam. In top photo, Euclid

loaders fill 35-yd capacity bottom dumps. In bottom photo, 18-yd Caterpillar scraper pushed by a Cat D9 removes overburden.

How Zachry Moves Earth—

A KING-SIZE equipment fleet is licking a Texas-size earthmoving job for San Antonio contractor H. B. Zachry. To build up a 21,000,000-yd earthfill dam embankment, the contractor is working 35-yd bottom dumps and 40 and 18-yd scrapers on two 10-hr shifts a day.

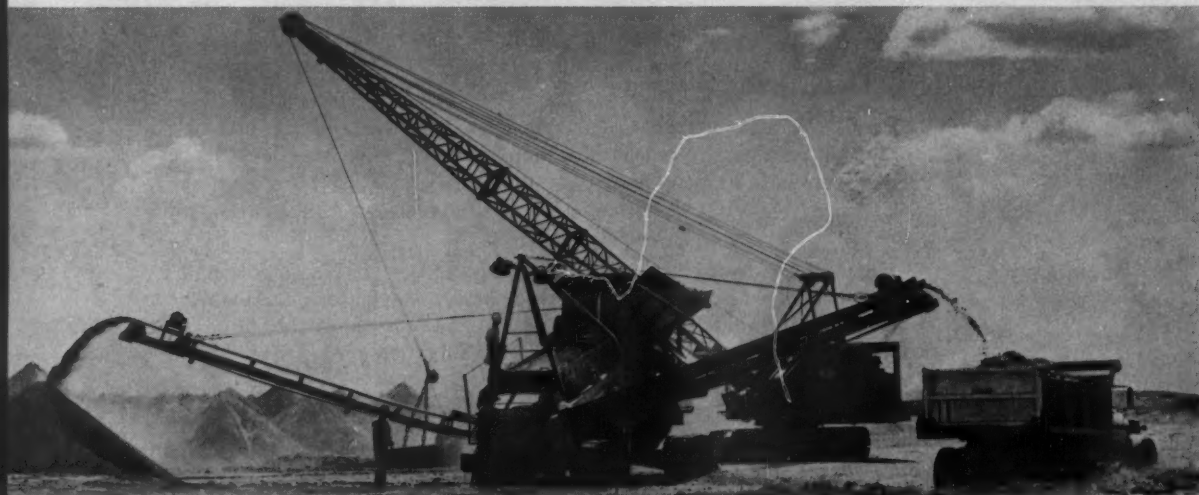
Zachry is moving an average of 50,000 yd of material daily to form the embankment for Twin Buttes Dam—the main structure of the Bureau of Recla-

mation's \$32.5-million San Angelo project in west-central Texas.

Under its \$11,836,428 contract, Zachry has 1,200 days to complete the embankment, spillway, outlet works, and connecting roads for Twin Buttes. Since June, the contractor has placed almost 5,000,000 yd of material in the embankment.

A pair of Euclid 12BV loaders with 54-in.-wide,

continued on page 84

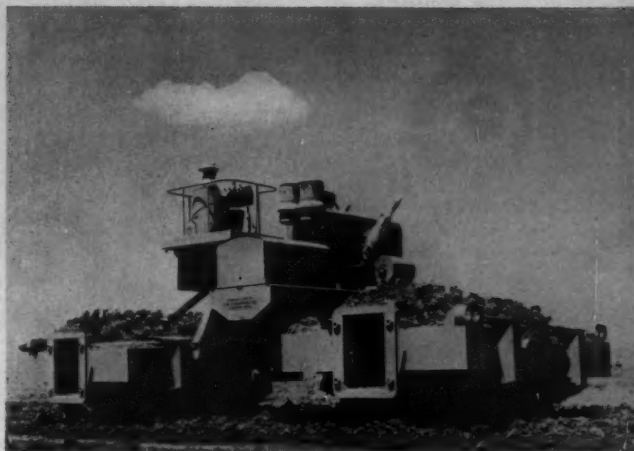


SEGREGATING—As a dragline feeds the hopper, a Simplicity processing plant separates gravel and cobbles to discharge 100 yd

per hr. Coarse material for the foundation's downstream side is loaded into an 8-yd Mack truck and fine aggregate is stockpiled.



CLEARING—A Holt root plow on a D8 churns stumps of mesquite trees that were felled by two D9's dragging a chain between them.



COMPACTING—Impervious material for the embankment's core is placed in 12-in. layers and compacted by six passes with an 80-ton LeTourneau M50-55 Power-Packer.

RAKING—After the root plow turns about 12 in. of soil, a Holt root rake mounted on a Cat D8 takes over and combs the embankment's foundation.

Texas Style

LEVELING — A Euclid scraper hauls material away as a Caterpillar D9 with a ripper and dozer blade strips surface material from the left abutment of the dam.



PLACING—Prewet material is hauled to the embankment's impervious zone by a Euclid 143W bottom-dump. Ferguson rollers pulled by a Cat D9 compact it.



COMPACTING—Ferguson sheepsfoot rollers compact fill in cutoff trench in dam's upstream foundation. Pump in foreground dewaterers ground seepage from a sump that is supplied by a French drain.



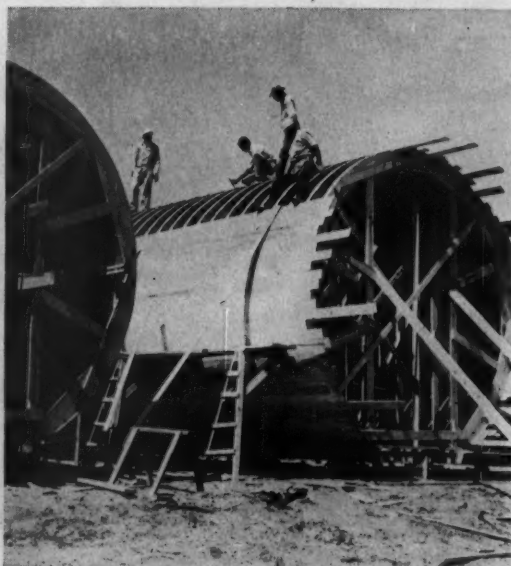
HOW TO MOVE EARTH—TEXAS STYLE . . . *continued*

40-ft-long belts are filling Zachry's fleet of 15 Euclid 35-yd bottom dumps from pits located an average of $1\frac{1}{2}$ mi from the dump area. On a good day Zachry loads one of the 35-yd wagons every 45 sec. Five 40-yd Euclid and nine 18-yd Caterpillar scrapers also are hauling material.

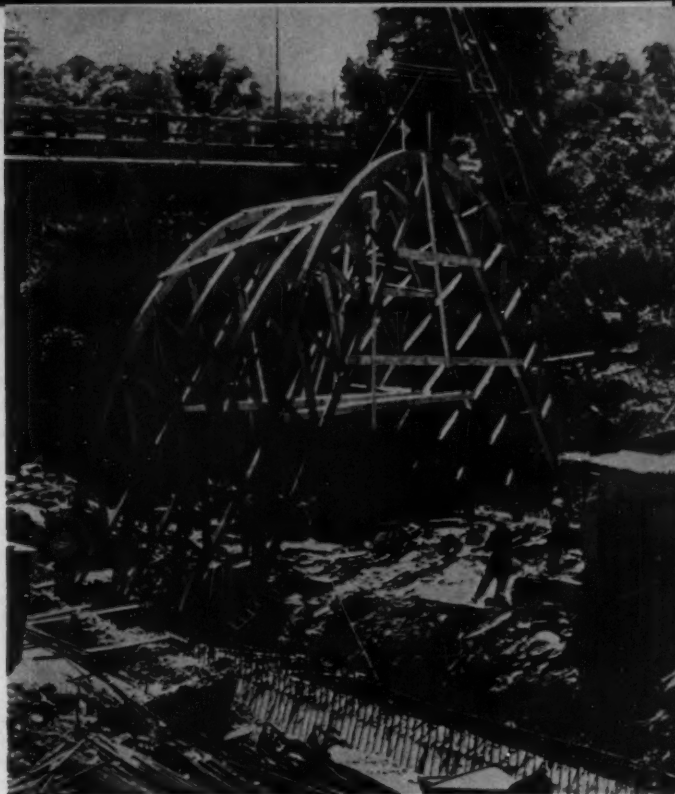
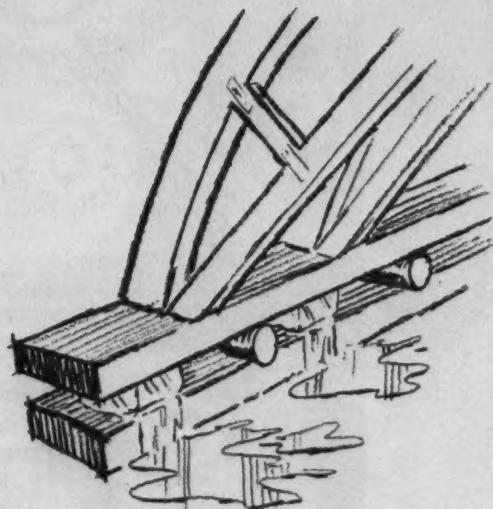
The embankment's impervious zone contains a mixture of selected clay, silt, and sand fill. Other sections contain caliche, sand, gravel, and cobbles. A Simplicity processing plant is separating gravel and cobbles at an average rate of 100 yd per hr.

When completed in 1963, Twin Buttes Dam will be the Bureau of Reclamation's second longest earth-fill structure, its third largest in volume, and the seventh largest earthfill dam in the United States. Maximum height above the streambed will be 130 ft and the embankment will be 8 mi long at its crest.

FORMING—Workmen construct inside forms for outlet works conduits. To be covered with $\frac{1}{4}$ -in. plywood sheathing, forms are $15\frac{1}{2}$ ft in dia, $28\frac{1}{2}$ ft long.



ERECTION—Crane positions one of five laminated timber trusses that will support forms for concrete arch. After being decentered by melting ice, form section will move on rollers to next pour position.



A METHODS READER REMEMBERS

Ice Decenters Trussed Arch Forms

A CONSTRUCTION METHODS reader with a long memory put to work an idea that appeared in this magazine 10 yr ago to solve a bothersome decentering problem.

The *Construction Methods* item told how a Texas contractor used blocks of ice to lower a 100-ft section of 24-in. concrete culvert pipe about 1 ft below its original grade. At that time, the contractor dug out around and beneath the pipe, leaving occasional pillars of earth. Then he wedged blocks of ice under the pipe and removed the earth pillars. The Texas sun melted the ice to complete the job.

Gordon Cooper, owner and head of Cooper Engineering Co. of Arlington, Va., thought enough of the idea to file it away. It came in handy when his outfit got the job of constructing the largest arched concrete culvert in Virginia.

The culvert is a 103-ft-long arch structure that runs on a 30-deg skew under the Columbia Pike near Fairfax, Va. The arch

spans 60 ft and measures 70 ft across on the skew. Rise of the arch is 30 ft. It varies in thickness from 2½ ft at the haunch to 1½ ft at the crown.

Cooper decided to build one set of forms and make three pours. The contractor started with the center section and moved the form unit twice. His crew built a 37-ft-wide form consisting of five pairs of laminated timber trusses on 7 2/3-ft centers supporting double 2x8 walers and ¼-in. sheeting. Each pair of trusses is hinged where the ends meet at the crown of the arch.

At the haunch, trusses frame into 4x8-in. plates supported by cribbing atop 4x8-in. oak mud sills. Space between plates and mud sills is 10 in.

Cooper's problem was how to decenter the form unit and lower it onto 6-in. rollers inserted between plate and mud sill on each side. Jacks ordinarily would be the answer, but Cooper didn't want to go to the expense of getting a set of hydraulic jacks and a console to control them. And he

figured screw jacks would waste time and require too many men to manipulate them.

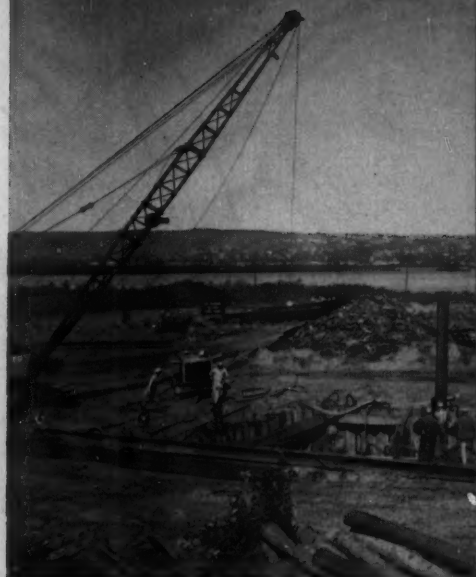
Then Cooper remembered the *Construction Methods* story about the blocks of ice. Why not apply it here?

He decided to replace the cribbing with blocks of ice and let the sun gradually drop the form unit onto the rollers. This scheme would require a minimum of jacking to nudge loose the cribbing and insert the blocks of ice between plates and mud sills.

It worked out fine. Two weeks after pouring the initial arch section, Cooper's crew decentered the form unit without a hitch. The ice melted enough to drop the form onto the rollers in about 2½ hr. With a come-along, the crew took up on cable ties connecting the bottom ends of the trusses. This pulled the hinged halves of the form together and provided clearance at each side. A crane pulling with its lift line through fairleads readily moved the form into position for the next pour.

ON CONNORS POINT →

Manitowoc crane fitted with a Link-Belt 520 diesel hammer drives 14-in. bearing piles in a pier excavation lined with steel sheeting and kept dry by a wellpoint system that dewateres a thick deposit of scrap slab lumber.



Auger and



ON THE MAINLAND →

Rig on right pre-boring holes with a 52-ft-long Ka-Mo auger makes it easy for Northwest crane fitted with a Link Belt 312 hammer to drive 14-in. tube piles through a thick layer of clay that stymied all earlier efforts.



Foundation problems aplenty cropped up during construction of these bridge piers and called for just about everything in the book. Wellpoints were the answer to a dewatering problem at some pier excavations where a seam of scrap slab wood was piping in water from the lake. Preboring with an auger finally got tube piles through a thick layer of dense clay after heavy-duty hammers and jetting failed. Even work above ground was not routine. Pier columns required complicated adjustable steel forms.

Fancy Forms Lick Tough Piers

FROM ONE EXTREME to the other—that's how the foundation material underlying the piers of the Duluth-Superior Bridge shapes up. And both extremes presented problems to the contractor, Massman Construction Co. of Kansas City, Mo.

Immediately under the soil overburden of Connors Point, a strip of land between the two water spans where 10 approach piers are being built, foundation material consists of an unexpectedly thick layer of scrap slab wood dumped there over the course of many years by a lumber mill. This slab wood extends about as deep as the bottom of the footings. It provides a direct pipeline for water from Lake Superior to flow into the foundation excavations.

Original plans calling for the use of wellpoints to dewater un-sheeted holes had to be scrapped in favor of playing it by ear. Wellpoints alone did do the job

for three piers, but all others on Connors Point required sheetpile cofferdams as well. Griffin wellpoints 3 ft outside the sheeting dewatered the cofferdams enough so that footing forms could be set in the dry.

A P&H Model 655 crane fitted with a McKiernan-Terry 9-B-3 hammer drove the sheeting enclosing the pier footings and placed the wellpoint equipment. A Manitowoc 3900 crane with a Link Belt 520 diesel pile hammer drove 14BP73 bearing piles inside these cofferdams to seat the piers. Altogether they drove 35,500 ft of the H-piles.

The Other Extreme

Massman had no trouble driving the H-piles for the piers on Connors Point. But that wasn't the case by a long shot on the mainland, where the job calls for building 19 piers and an abutment at the south end of the bridge. There they had to drive thin-

walled tube piles through a dense layer of clay into good bearing sand.

Driving was hard, to say the least. A Northwest 95 crane fitted with a Link Belt 312 diesel hammer drove the Union Metal Mono-tube pile shells just so far—and then they stopped cold. Further efforts didn't budge them. Then Massman tried the larger Link Belt 520 hammer that delivers 30,000 ft lb of energy per blow. It moved them about a foot, and then they took up again.

In desperation the contractor switched to a big single acting steam hammer rated at 24,350 ft lb. Still they had no luck, although they "whaled the daylight out of 'em," according to the pile foreman. At this point the piledriving crew was about ready to give up, but the engineers prodded them by insisting they drive a 14BP73 test pile. The test pile easily penetrated the clay

continued on next page

AUGER AND FORMS . . . continued

Next they tried a high pressure jet along with the heavy steam hammer. This worked all right for the vertical piles, but it almost proved disastrous for the battered piles along both sides of the footing. The tips of these piles emerged from beneath the cofferdam enclosing the footing area. The jets stirred up the underlying material, which began boiling up into the bottom of the cofferdam, which threatened to "blow." Rather than lose the hole, they stopped jetting.

They finally turned to pre-boring to sink the piles. They pre-bored holes for the pile shells with a 10-in. Ka-Mo screw auger mounted on a Northwest Model 6 crane. Made up of 4-ft sections, the auger was assembled to its full 52-ft length and placed in the leads in one piece. It was so long and limber that a center H-beam guide was needed.

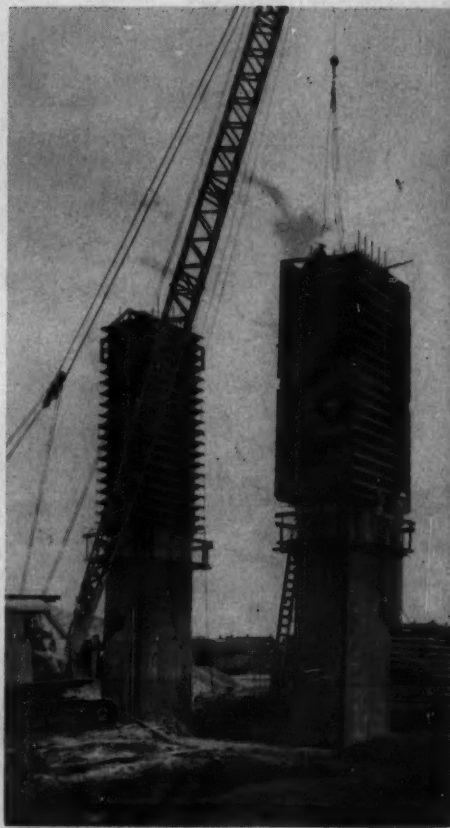
Augering went fast. It took only 7 to 10 min to bore a 50-ft-deep hole through the clay with a special cutting head. Then it was a cinch to drive the piles to refusal in the underlying sand with the formerly impotent Link Belt 312 hammer. The pile shells were 14 in. in diameter at the top, but the bottom 25 ft tapered to 8 in at the tip. Altogether Massman drove 760 Monotube piles totaling about 30,000 ft in length for the mainland piers.

Crews set large wooden panels to form the pier footings when piledriving in a foundation excavation was completed. Any one of two or three cranes on duty along the line of piers handled this work. Besides the Manitowoc 3900, which handled all heavy lifts, and the two Northwests used in the foundation phase, Massman had two Manitowoc 2000's and an American truck crane on the job.

They have an unusually large number of cranes at hand for a project of this size because the broad expanse of water between the two parts of the job limits the mobility of the rigs. But they write off this extra expense rather than waste time waiting while transferring a rig from one side to the other.

Forming the Columns

With pier footings in place, Massman pulled the sheetpiling in the cofferdams and began forming the columns, cross struts (where used), and the caps of the piers. They bought prefabricated steel forms for each of the three different types of columns on the job. Columns for 14 of the piers were square with two battered faces and two plumb faces. Eight piers had roughly rectangular columns with all sides plumb, but with three changes in size of section. The other six piers had col-



ERECTING FORMS — Manitowoc 2000 crawler crane with long boom positions steel forms for second lift of pier columns. Height of lifts varies, maximum being 31 ft.



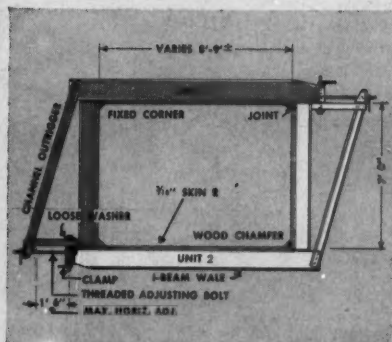
POURING PILES—Crane holds bucket over hopper that chutes concrete into tube piles. Mainland piers called for 760 cast-in-place piles totaling about 30,000 linear ft.

umns that combined the two battered faces of the first type with the changes in section of the second.

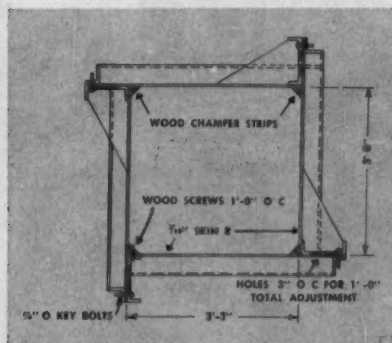
To take care of the first type of column, Dixie Form and Steel Co. of San Antonio, Tex., built steel forms adjustable at diagonally opposite corners by use of long threaded bolts. The two other corners were fixed, with the constant batter built in on two sides.

The form consisted of $\frac{3}{8}$ -in. steel skin plate with horizontal I-beam wales, or column clamps, on 1-ft, 7-in. vertical centers. Clamps held the two L-shaped sections of each form together at the movable corners. A channel strut angled out from each of the fixed corners to brace the end of the adjusting bolts at the other two corners. Maximum horizontal adjustment at the corners was 1½ ft.

Dixie also supplied a form ad-



ADJUSTABLE AT TWO CORNERS—threaded bolts at diagonally opposite corners make form adjustable for tapered sections. Batter is built into two fixed corners.

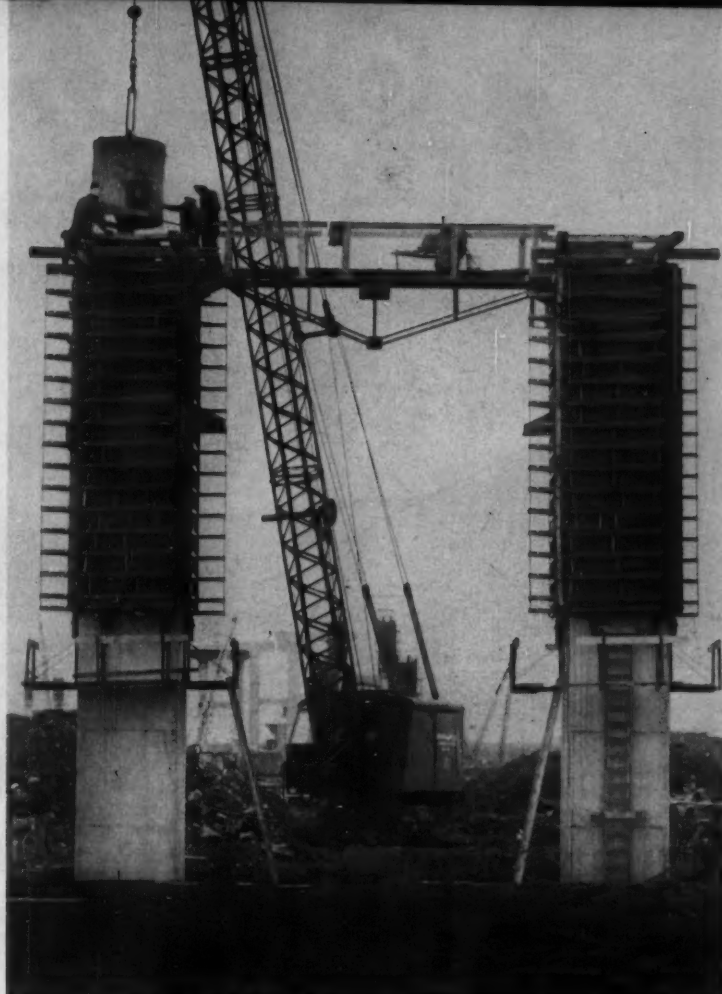


ADJUSTABLE AT ALL CORNERS—Second type of prefab column form has bolt holes at each corner. A third type incorporates the features of both types.

justable at all four corners for the second type of columns with plumb faces but three changes in section. Five bolt holes, spaced on 3-in. centers at each corner, provided a total 1-ft overall adjustment. These forms also had I-beam wales at 1 ft, 7 in. centers and 3/16-in. skin plate.

The third type of form provided for two battered faces and two plumb faces as well as three changes in size of section, thus combining the features of the first and second types. All four corners were adjustable. At two diagonally opposite corners threaded bolts permitted adjustment of the battered sides. At the other two corners bolt holes allowed for the varying size of the sections. Industrial Welders & Machinists of Duluth supplied these forms.

The height of lifts in which concrete was brought up in the columns varied from pier to pier,



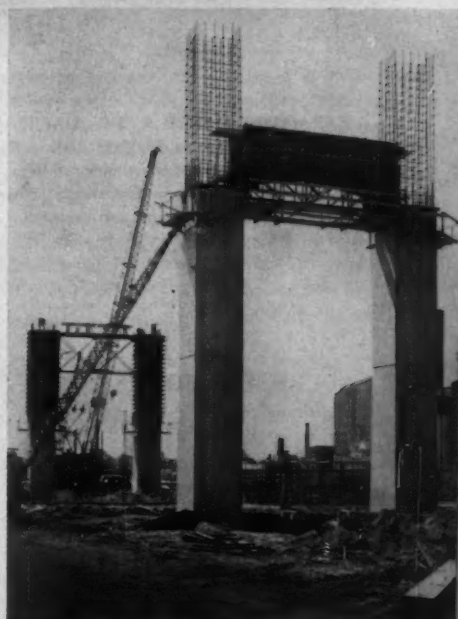
POURING COLUMNS—A 2-yd Wiley bucket drops load of concrete into column forms. Column pours average 100 yd. Altogether, piers will take 14,000 yd.

depending on their size. The highest lift of 31 ft occurred on piers with columns measuring 7x9½-ft at the base. Two sets of forms were built for these pours. Two pours were made on each pier with a set. The two lower pours ran the adjusting screws out to their limit, so the upper two pours were made with a smaller form which adjusted down from a plan size of 7x7 ft.

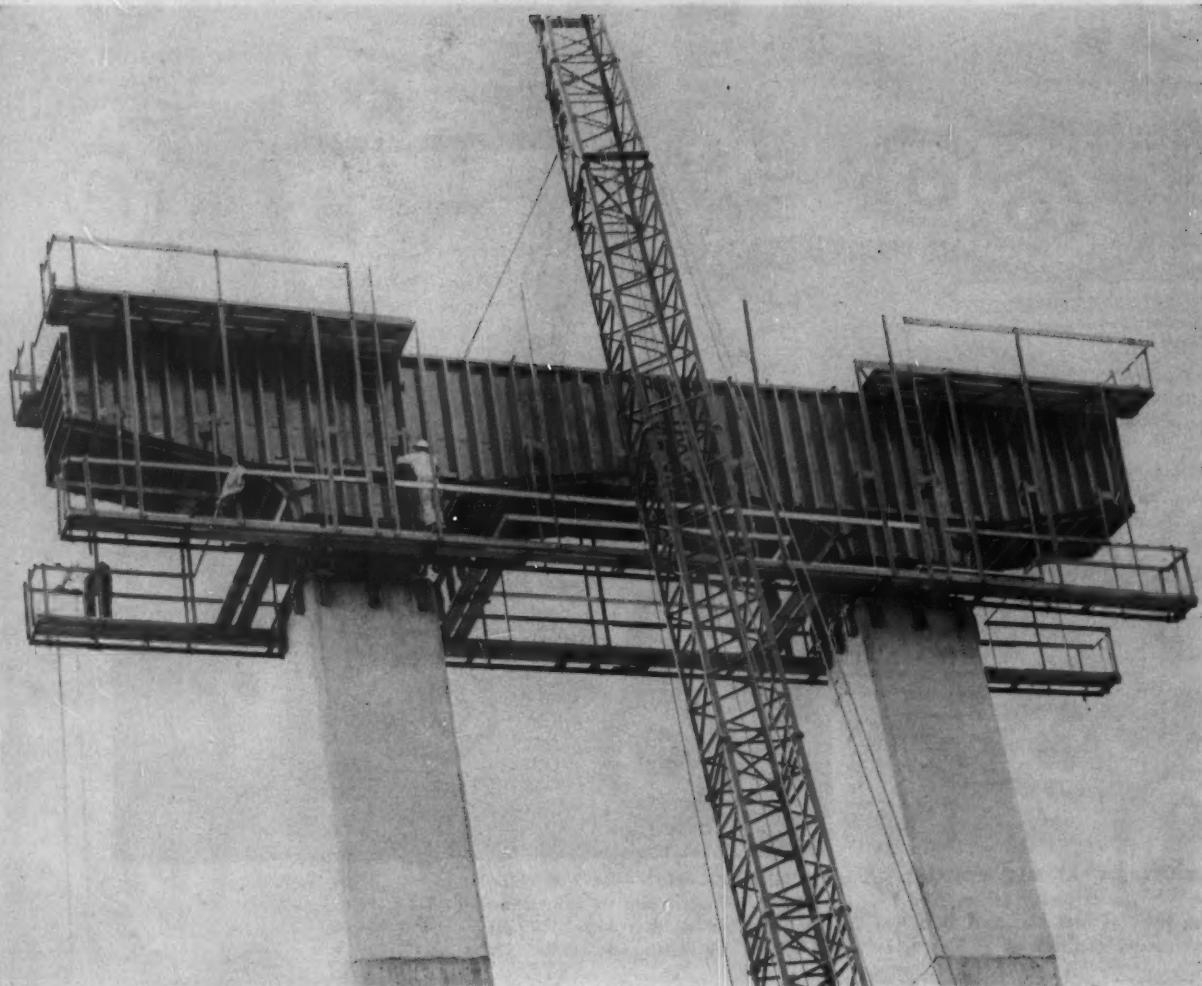
Cranes Handle Pours

Transit-mix trucks delivered all concrete to the job from a commercial batch plant in the area. Cranes fitted with 2-yd Wiley buckets handled placement. Column pours averaged about 100 yd. Total volume of concrete required for the job, aside from some placed in the piles, was approximately 14,000 yd.

Thirteen of the piers had a strut between columns about halfway



FORMING STRUT—Prefab steel form with trussed bottom that supports side panels spans between pier columns. Inboard panels connect strut form to the column forms.



CAP FORM MAKES A BIG LIFT —

Set in one piece on top of 103-ft-high columns by Manitowoc crane, pier cap form weighs 22 tons. Sides of form function as girders to support form and concrete.

AUGER AND FORMS...

continued

up. A steel form with a self-supporting trusted bottom spanned between columns to form this strut. The side plates of the strut form rested on the trusses. A special column panel was used where the ends of the strut frame into the columns.

Fifteen of the piers had identical caps with a long cantilever

overhanging the outside face of the columns. The sides of this cap form, also fabricated of steel, were designed as girders to support the bottom. This form weighed 22 tons, and was about the size of a freight car. A Manitowoc 3900 set it in one piece, lifting it more than 100 ft above the ground. The other cap forms were made of wood with the overhang outside the columns supported by steel beams.

In order to meet a tight schedule, Massman carried out construction during the winter. This necessitated some expensive measures, such as heating mixing water and aggregates, insulating forms, and defrosting reinforcing steel and the steel forms. Particular care was taken with insulating

the steel forms, which, unlike wood forms, do not provide any insulation in themselves. Insulating bats were checked carefully to be sure there were no gaps, especially at the corners.

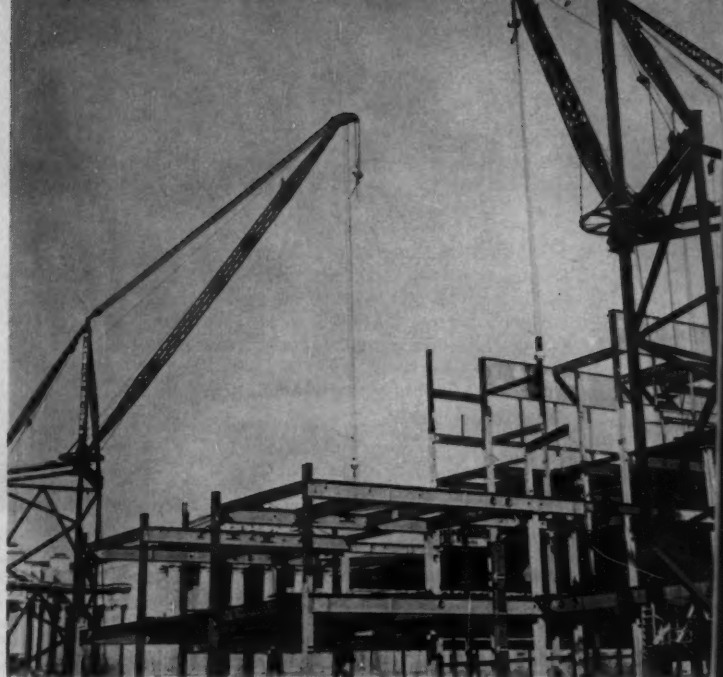
In spite of the extra expense of winter concreting, the contractor kept to their policy of completing work within the time period set up by the contract.

Men on the Job

In charge of the job for Massman was general superintendent Kenneth R. Sevy. Representing the consulting engineers, Howard Needles, Tammen & Bergendoff, was C. R. Swanson. E. C. Kesting was district construction engineer for the Wisconsin State Highway Commission.

EASY TO MOVE—Tower cranes were used in place of guy derricks to erect steel because they could be moved on rails in 50-ft stages to keep pace with the job. Derricks carried 120-ft booms.

Twin Derricks Ride Rails Atop Second Floor Setbacks



IN AN UNUSUAL erection procedure, two tower derricks set structural steel for the Smithsonian Institution's new building in Washington, D.C. American Bridge Div. of U.S. Steel Corp. sat the derricks atop second-floor setbacks on both sides of the five-story structure.

This technique was necessary because the building's design called for concrete framing, instead of steel, in the basement. Also, the 300x580-ft first-floor concrete slab had to be poured before the steel superstructure was placed. And the 8-in.-thick slab was not strong enough to hold heavy cranes.

Out of reach of cranes operating beyond the slab, the steel superstructure could have been erected by guy derricks. But they would have been inefficient on the low, long building, requiring frequent moves to new setups. Instead, American Bridge decided to erect the steel with tower derricks.

The superstructure's design lent itself nicely to this scheme. At second-floor level, 40-ft setbacks on each long side reduce building width to 220 ft and provide ideal runways for the tower derricks.

From this position the two derricks together could cover the entire width of the building. And they could move lengthwise along the structure as work progressed. They erected steel for the rest of the first story and for the top four stories.

First, a crane erected one 50-ft-long, 40-ft-wide bay of steel up to setback level at each of two corners of the building. Here, 14-in. WF beams were positioned to serve as rails for the tower derricks. Gauge of the track was about 30 ft.

Each derrick consisted of a 65-ft triangular steel tower mounted on rail carriages and topped by a stiffleg derrick with a 120-ft boom. Powered by a P&H hoist, each derrick had a capacity of 50 tons.

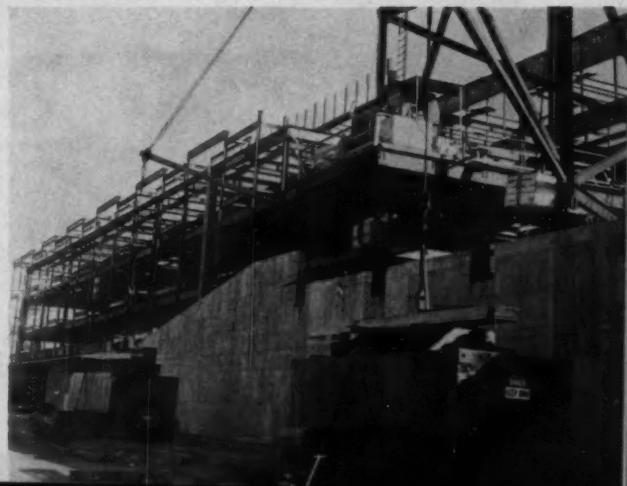
At maximum radius (with a flat boom) the der-

ricks managed to handle the heaviest beams, which weighed 22 tons. The frame required huskier-than-normal members because spans between columns are as wide as 50 ft to accommodate exhibit areas.

Two pontoons filled with water served as counterweights for each tower derrick. Suspended by cables from outriggers at the rear of each tower, the 25-ton counterweights rested on steel frames set on rollers. The rollers traveled on rails that ran the length of the building at ground level outside the concrete slab.

Before each move, crews lowered jacks supporting the undercarriage of each tower to drop the entire load onto the rail carriages. They also lowered the counterweights onto the steel frames that rode on rails alongside the building. Then, with the falls free, each crane moved itself along the rails to its next position.

The crew completed erection of the 13,000 tons of steel in five months. In charge for American Bridge was superintendent Elmer Olson. His assistant was Joe Patterson. Engineer on the job was Ralph Hedrick. Norair Engineering Corp. is general contractor.



ALSO RIDE RAILS—Counterweights are 25-ton pontoons that ride on rails set at ground level when the derricks are moved.

Jet Runway

FOR THE FIRST TIME on a major project, a concrete runway has been resurfaced by bonding a thin layer of concrete to the old surface. To insure a crack-proof bond, the contractor had to thoroughly clean the surface and joints, etch the old pavement with acid, and spread a thin bond course of grout.

Markham & Brown Construction Co. of Dallas successfully placed a 2-in.-thick concrete surface on a 200x7,000-ft runway at Randolph Air Force Base, Tex. Ordinarily, resurfacing jobs of this kind require a maximum overlay of 5 in. of concrete.

The original runway had been built 16 yr ago. Through constant punishment from piston aircraft, the slabs had become too rough and uneven for safe instrument landings by high-speed jets.



RESURFACING—Rough runway gets 2-in.-thick overlay. Workmen with brooms spread bond course ahead of paver. Grinder (left) works in adjoining lane.

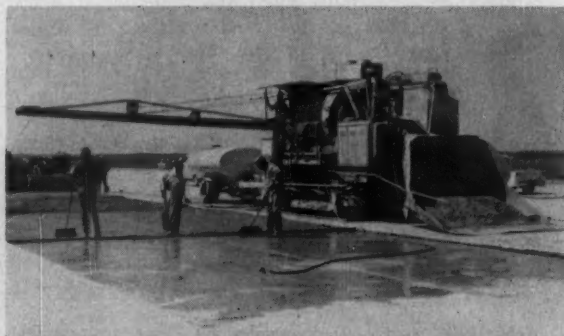
Here's How Crews Placed a 2-in. Concrete Overlay To Save Runway



SANDBLASTING—A hard silica sand forced through a high-pressure hose removes rubber and grease deposits from the runway. Stake truck carries the sand and tows compressor.



RINSING—Crew rinses surface with water and scrubs it with brooms to restore it to a neutral state after reaction subsides.



SPREADING GROUT—Workmen brush a 1/16-in.-thick coat of grout that serves as a bonding agent. Paving operation follows.

Saved by Novel Face-Lifting Job

To correct this situation, two alternative methods were investigated in addition to the thin-bonded overlay. One called for mud-jacking the slabs; the other for applying a layer of hot-mix asphaltic concrete. Mud-jacking was ruled out because it would not correct surface irregularities. And asphalt would deteriorate when subjected to fuel spillage.

Randolph engineers say that the thin-bonded overlay as compared to a normal 5-in. overlay resulted in a saving of about 13,000 yd of concrete. Contract price was \$362,000.

Markham & Brown's first operation was to remove paint, grease, bituminous material and rubber deposits from the runway. Job specs called for cleaning the runway with scarifying machines, but the contractor obtained ap-

proval to substitute sand-blasting guns. Two stake trucks carried the sand and towed compressors that operated the guns.

A subcontractor, Townsco, then removed joint sealer with a specially adapted aircraft tug. The tug, a small four-wheel tractor, was fitted with a hydraulically controlled joint plow mounted vertically on one side. When lowered, the blade of the plow slipped into joint and scooped out the sealer as the tractor advanced. Stubborn material that remained in the joint after the plow passed through was chipped out with an air hammer.

After cleaning, joints were treated with a cement paste and filled with 1:3 cement-sand grout. The grout was sprayed with a membrane curing compound that had to be sand blasted three days

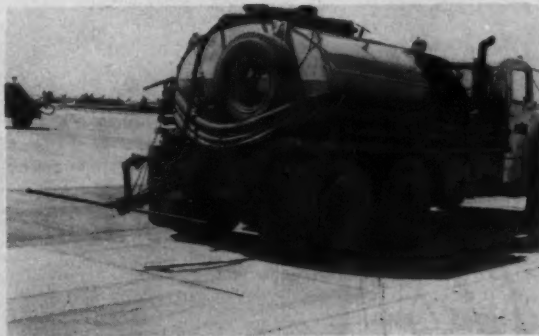
later to prevent it from interfering with the overlay bond. An Elgin 2-cu-yd self-propelled sweeper and a tow-type sweeper cleared away sand accumulations.

Texas Acidizers, another subcontractor, etched the runway with concentrated hydrochloric acid at the rate of 1 gal per 100 sq ft. First, the runway was sprayed with water to help spread the acid uniformly. Then the acid was distributed from a truck that mounted a 500-gal tank with a 12-ft spreader bar. The foaming chemical reaction between the acid and the concrete produced a surface texture like sandpaper that proved excellent for bonding. After the chemical reaction subsided, the contractor rinsed the surface with water to restore it to a neutral state.

continued on next page



JOINT CLEANING—Hydraulically controlled joint plow mounted on one side of a small tractor slips into joint and digs out sealer.



ETCHING—Truck that mounts 500-gal tank with 12-ft spreader bar sprays hydrochloric acid to create a surface texture like sandpaper.



PAVING—Bucket from Koehring Twin-batch paver (left) places concrete over the bond course. A Blaw-Knox transverse finisher (above) strikes off the concrete.

Before putting down the bond course of grout, the contractor erected specially fabricated forms to create 25-ft-wide paving lanes. Made of ¼-in. plate steel, the forms were 2 in. deep and 10 ft long. A light channel member was welded to the outside of the form; the inside was smooth.

The forms were rigidly supported with pins and bolts secured in holes drilled in the existing pavement. Wood shims were placed under the forms wherever necessary to meet gradient requirements. On the outside edges of the runway, where the forms had to sit on soil, a standard 8-in. highway form was used. A stabilized base was built to prevent subsidence while the form was carrying the load of the paving train.

Longitudinal joints were preformed by abutting a bituminous-filled fiber board against the inside of the forms directly over the existing joint. Transverse joints were sawed later.

Grout consisting of equal parts

cement and manufactured sand was mixed in a Jaeger 16-cu-ft portable mixer and moved to the paving site by a front-end loader. There, workmen brushed it into the surface with brooms to create a 1/16-in.-thick coating that served as a bonding agent.

Placing the Overlay

Concreting of the 2-in.-thick overlay followed one or two slab lengths behind the bond course. Concrete was dry-mixed on the site in a Blaw-Knox batch plant and transported in batch trucks. The paving train consisted of a Koehring Twinbatch 34E paver, a Blaw-Knox transverse finisher, and a Koehring longitudinal finisher. Final finishing was done with a burlap drag to obtain a uniform gritty surface texture.

While placing concrete, the contractor protected the previously cleaned adjoining lanes by spreading sand outside the forms. Excess concrete and oil droppings from the equipment were deposited on the sand mat.

Transverse joints were sawed about 10 hr after concrete was placed—usually the same night. At first, the contractor tried to preform the joints with the fiber-board filler, but this procedure was discarded because it was too hard to place the filler accurately over the old joint. The ¼-in.-wide joints were made with Felter 36-hp concrete cutters and Eveready saws, then blown clean and filled with Careylastic sealer.

Hot Texas temperatures required the contractor to pay special attention to curing to minimize shrinkage. A white pigmented compound was selected because it reflected the heat. As soon as the compound dried, a tank truck that traveled the length of the paving lane applied a water fog spray until sunset.

The final step called for grinding down high spots to meet the close tolerances of ¼-in. in 10 ft.

The project was developed under the direction of Col. W. H. Dieterle, Randolph engineer.



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Better balance and stability: Approved and exclusive use of dry ballast in all four tires gives better weight distribution and lower center of gravity — dampens tire bounce and permits better blade control.

Inside push arms: Unlike crawler-mounted dozers, all rubber-tired units have push-arm brackets mounted on the main frame. The D-120 push-arms, however, are located inside front wheels, close to main frame for the most direct transfer of forces and the least strain. This also gives greater accessibility to the front wheels for hub and tire servicing.

"Full" power-shift transmission: Hough-built, this unit does not require stopping for range shifts. It is a full-reversing, constant-mesh type with four speed ranges, up to 26 mph., in both forward and reverse.

Matched torque converter: This is *not* a compromise converter for both dozer and shovel application. Instead it is designed specifically for bulldozing and makes fullest use of the tremendous engine power to develop maximum tractive effort. A torque-converter change is part of the bulldozer-to-shovel conversion package.

"Power-transfer" differentials: Provided on both axles for the best possible traction. When one wheel is capa-



PAYDOZER is convertible to this H-120 PAYLOADER

ble of more tractive effort than the other on the same axle, it can automatically receive 38% more torque.

"Three-way" power blade control: The D-120 blade is 12'-4" wide at the cutting edge and 4'-8" high. Adjustable from 1'-6" below grade to 3'-2" above; pitch adjustment of 35 degrees and blade tilt of 10 degrees on either side.

Hydraulic features: The system is closed and pressure-controlled to exclude air-borne dirt and foreign matter. Transmission and torque-converter oil is kept cool by a separate fan-cooled radiator.

Ease of operation: In addition to power-shift transmission there are twin hydraulic steering booster rams, and 4-wheel power air brakes with "Operator's-choice" brake controls — exclusive in its class. These dual foot pedals permit choice of braking with or without transmission engaged for any operating situation.

Standard equipment: Included are open-type cab, front and rear windshields and wipers, special lights and swinging draw-bar. Standard tires are 26.5 x 25 with 29.5 x 25 tires optional.

THE FRANK G. HOUGH CO.
706 Sunnyside Ave., Libertyville, Ill.

Send full data on the Model D-120 PAYDOZER

Name

Title

Company

Street

City State

2-B-1



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS

SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYMOVER, PAYLOOGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.



HOUGH

Circle 96 on Reader Service Card



PAYDOZER®



PAYLOADER®

Now the Model H-120 tractor-shovel is an even bigger value because it is **convertible**

into the new D-120 PAYDOZER giving you
two machines for about the price of one

The value of the H-120 PAYLOADER tractor-shovel, with its outstanding performance and productive capacity, is tremendously increased by an optional package which makes it possible to convert this tractor-shovel into a 'dozer.

Whenever seasonal conditions or any new projects dictate the need for 'dozer or pusher units, rather than loaders, these machines can be converted from one type to the other in a relatively easy and economical manner. Resulting benefits add up to greater flexibility and versatility while, at the same time, investment costs are almost halved.

The H-120 tractor-shovel is outstanding in many different ways. It has . . .

More power than any other machine in this category with its 300 hp turbo-charged diesel engine. In addition, the torque-converter is engineered so that engine output is properly proportioned between traction and hydraulic requirements, and so that both these demands can be served simultaneously without engine lug-down.

More dumping clearance, and more dumping reach, than comparable units. It loads big trucks and railroad cars more evenly and easier — stockpiles higher.

Better balance and stability because of the exclusive use of extra-strong "T-1" steel for box section boom arms that saves over a ton of dead weight on the load-carrying end. The approved and exclusive use of dry ballast material in the rear tires lowers the center of gravity with 50% of the weight below the rear axle.

Distinctive boom design, forward and clear of the operator for greater safety. It features a single bucket-tilting ram and high-leverage linkage with



PAYLOADER is convertible to this D-120 PAYDOZER

tremendous breakout force — also simplicity and fewer parts, reducing wear and maintenance.

Hough-built full power-shift transmission of advanced design. It is a full reversing, constant-mesh type providing 4 gear ratios in each direction — requires *no stopping* for a "range" shift.

Easy operation because of power-shift, power-steer and 4-wheel power air brakes and "Operator's-choice" dual brake pedals. This feature, exclusive in its class, gives the operator the option of braking with or without the transmission engaged.

Many other features that mean better performance, lower maintenance and more value, such as: closed pressure-controlled hydraulic system; separate fan-cooled radiator to keep transmission-torque converter oil cool; torque-proportioning differentials in both axles; canopy-type cab with front and rear windshield wipers and special lights as standard. Bucket sizes are available from 3½ to 8 cu. yd. (S. A. E. rated). Exclusive Drott 4-in-1 bucket can also be supplied.



THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS

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HOUGH

THE FRANK G. HOUGH CO.
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Send full data on big Model H-120 PAYLOADER.

Name

Title

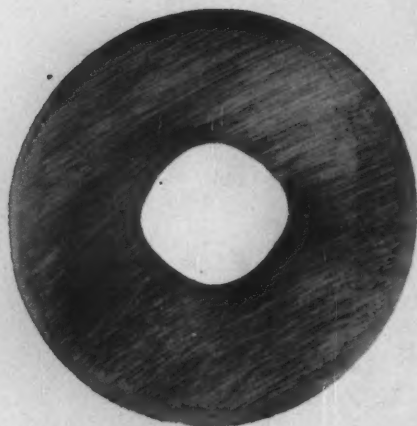
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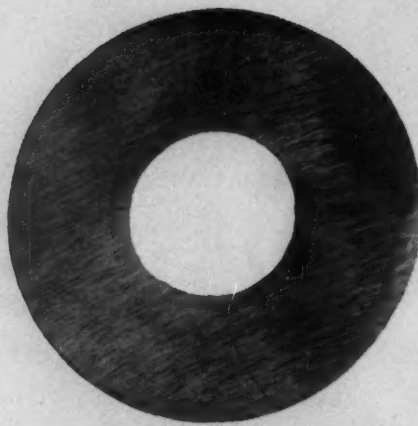
City State

2-B-2

Circle 99 on Reader Service Card



Cross section of average extension steel, showing distorted center hole.



Cross section of Sandvik Coromant Steel, showing perfectly uniform center hole.

See for yourself why
SANDVIK
Coromant Steels
last longer on the job!



Sandvik-originated smooth rope-threads make uncoupling easy.

The completely unretouched photographs above show clearly why Sandvik Coromant large-diameter extension rods last longer! Since Sandvik takes the time—and the trouble—to cold-roll these alloy drill rods, the flushing hole is uniform all the way through—smooth as a gun barrel. And, since the hole is even and perfectly round, you set up fewer strains and stresses in use...there's less whipping... and therefore, less breakage. And, with mechanically stronger rods, we can provide larger flushing holes for faster, more complete removal of cuttings.

What's more, the Sandvik-originated rope-thread makes coupling and uncoupling a hand operation—speeds the job—and reduces chance of incipient cracks developing from wrench marks.

All in all, you can't beat Sandvik Coromant Rope-Thread Steels for fast work and long life! Available from 1½" to 2" in diameter. To set up a test on your job, write to your nearest Atlas Copco office today. Address: Dept. CM-17.

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Circle 100 on Reader Service Card

CONTRACTORS BLASTING through tough rock to form a series of underground Atlas missile silos at Plattsburgh, N.Y., are working around the clock to complete three-fourths of the on-site construction work in only six months.

Facing this tight deadline on the \$24-million project is a joint-venture group sponsored by Raymond International, Inc. It includes Harry J. Kaiser Co., Macco Corp., and Puget Sound Bridge & Dry Dock Corp. One thousand men are working on three shifts six days a week on 12 silo sites spaced at 20 to 30-mi intervals around Plattsburgh.

Each of the 12 silos are 60 ft dia and 180 ft deep. At six of the sites, quartzite and dense shale begin at or near ground level. Specially - designed twin - boom crawler drills are required to get enough drill power into confined areas.

At the other sites, rock begins anywhere from 50 to 120 ft below ground level. Here, the problem has been an abundance of ground water.

A typical shaft-sinking operation exists near the Canadian border at Site No. 1 where rock starts right at the surface. The contractor needs 42 hr to complete a cycle of drilling, blasting, and mucking. It takes 14 hr to drill 400 blast holes, 4 hr to load and detonate 2,200 lb of powder, and 24 hr to clear the muck away. From 25 to 28 cycles are needed to bottom out a silo.

Drilling blast holes is expedited by twin-boom Crawl-IR units especially built by Ingersoll-Rand for this job. The twin-boom units use the same component parts as a single-boom model, but the adaptation permits the contractor to get the maximum number of drills into the silo areas.

Five twin-boom drills and one single-boom unit make a grid pattern of 10-ft-deep plumb holes at 3x3½-ft centers. The drills are fitted with 1¼-in.-dia, 10-ft-long drill steels and tungsten carbide bits. The single drill makes nine burn holes in the center of the pattern and line holes around the perimeter. The twin drills make

SPECIAL DRILLS—Twin-boom Crawl-IR units, specially built by Ingersoll-Rand for this job, allow the contractor to get the maximum number of drills into silo areas.



THE SILO—A 100-ton P&H crawler crane lowers a 5-yd skip into 60-ft-dia silo, which will be 180 ft deep when it is bottomed out. Dense shale and quartzite start at surface, extend entire depth.

Twin-Boom Drills Help to Sink Missile Base Silos



TWIN-BOOM DRILLS . . .

continued

NEW SEQUENCE—Crane lowers drill into silo to make a 3x3/2-ft grid pattern of blast holes. Chain-link fence (center) protects the workmen below from falling rock.

the remainder of the blast holes. Because of the extremely hard rock, bits must be changed after each round and sent to a nearby shop for regrinding.

The contractor uses 2 3/4 lb of Atlas 40% Giant Gelatin to 1 yd of rock. A pattern of millisecond delays throws shattered rock toward the center of the silo. There are up to 16 delays. Charges in the center are detonated first.

A 100-ton P&H crawler crane works from the rim of the silo to lift equipment in and out of the shaft between blasts. The same crane also handles a 5-yd skip during the mucking. A Cat 977 Traxcavator, which the crane lowers into the silo, loads the skip.

Fine muck must be removed from the silo to prevent it from plugging the next set of blast holes. To get it out, air is forced through a 2-in.-dia hose fitted with a nozzle. This blow pipe pushes the muck into a pile for removal.



Six to 7 ft of muck are removed and heaped to one side on the construction site after each blast. Later, an Eimco tractor-shovel loads it into dump trucks. Some shot rock is being used for base material on access roads to the missile sites; the rest is spoil.

As the silo is excavated, 6WF20 ring beams are placed horizontally around the perimeter to retain the rock walls. The uppermost ring

beam is suspended from 8-in. I-beams that cantilever over the rim of the silo. The I-beams are seated on poured-in-place concrete blocks and bolted to solid rock. A 3/4-in.-dia rod makes the connection between the ends of each cantilevered beam and the top ring beam. Successive rows of rings beams positioned about 10 ft apart are suspended from the beam directly above.

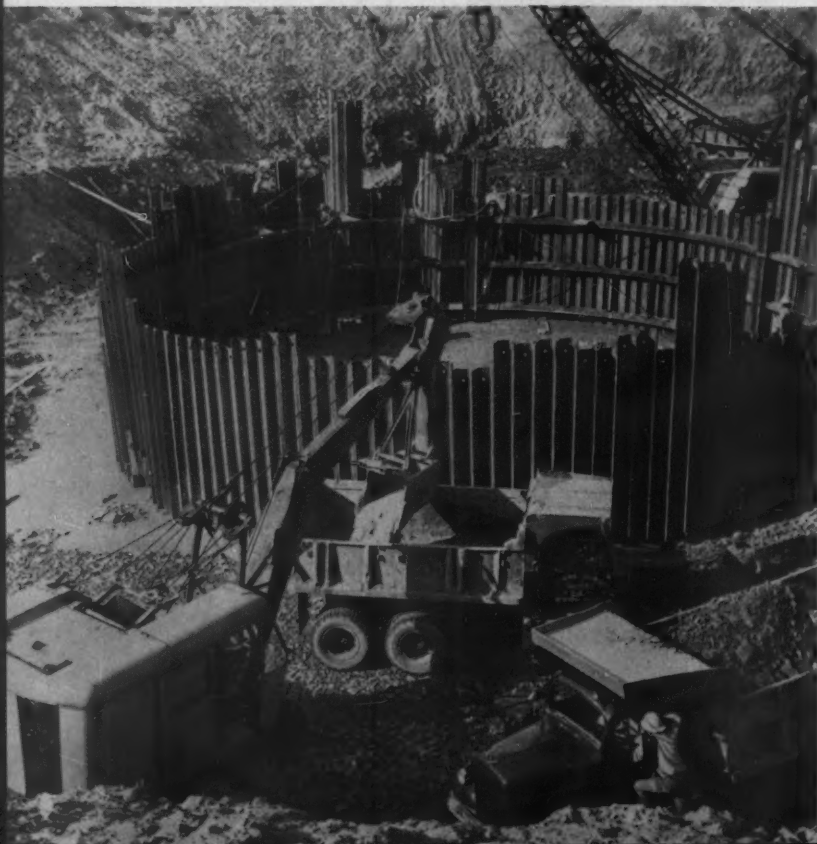
Wire mesh is placed between rows of ring beams to catch pieces of falling rock. Then concrete is pneumatically placed on the mesh to stabilize the walls.

As an additional safety precaution, a chain-link fence is hung vertically inside the silo, dividing the shaft into two compartments. While the crane lifts the skip on one side, workmen retreat to the other side for protection from falling debris.

Crews are lifted in and out of the shaft in a man cage handled by a Bay City truck crane. For ventilation, a Joy blower is mounted atop a 30-in.-dia pipe. The blower works on an exhaust principle to suck foul air out of the shaft.

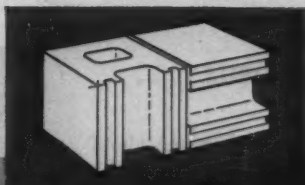
Rock isn't the only problem confronting the contractor. At Site No. 9, bordering Lake Champlain, the contractors found more ground water than expected.

continued on next page



SOUPY SITE—Contractor erects a cofferdam at a site where heavy ground water exists. A second cofferdam will be placed inside the first one to obtain required depth.

► Great new things
are shaping up in concrete block



Wall designed by Architect Alfred B. Parker, Miami. Photo courtesy of National Concrete Masonry Association.

Atlas Masonry Cement provides the right mortar

A notable thing about the new look in concrete masonry is what is being done with standard block. Here, for instance, a closed-lattice effect is achieved by laying up "stretcher" type concrete block, so that the ends are exposed. This basket-weave pattern creates an interesting exposed masonry wall resembling hand-hewn stone. For laying up this block, or any concrete masonry unit, ATLAS MASONRY CEMENT continues to be the preferred cementing material in mortar. It produces a smooth, workable mix, provides a strong bond, gives weathertight joints that are uniform in color. And ATLAS MASONRY CEMENT complies fully with ASTM and Federal Specifications. For information on masonry cement write: Universal Atlas, Dept. M, 100 Park Avenue, New York 17, N. Y.

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TWIN BOOM DRILLS . . .

continued

Here, they had to remove about 70 ft of extremely wet glacial till.

A well-point system was installed, but it wouldn't work. Finally, crews made a 36-ft-deep open cut with a 3½-yd 1601 Lima dragline. The material was so soupy that it had to be dumped behind a built-up earth dyke to prevent it from flowing back onto the job site.

To excavate the rest of the way down to bedrock, the contractor had to erect two cofferdams, one inside the other. Two cofferdams were necessary to obtain the required depth. Sheet piling could be driven only 15 ft without deflection because of the boulders in the till.

First, the contractor preassembled two circular steel supporting cages that served both as templates and as an internal bracing system for sheet piles. Both the 64-ft-ID exterior cage and the 57-ft-ID interior cage consist of three horizontal rows of ring beams hung on spud piles.

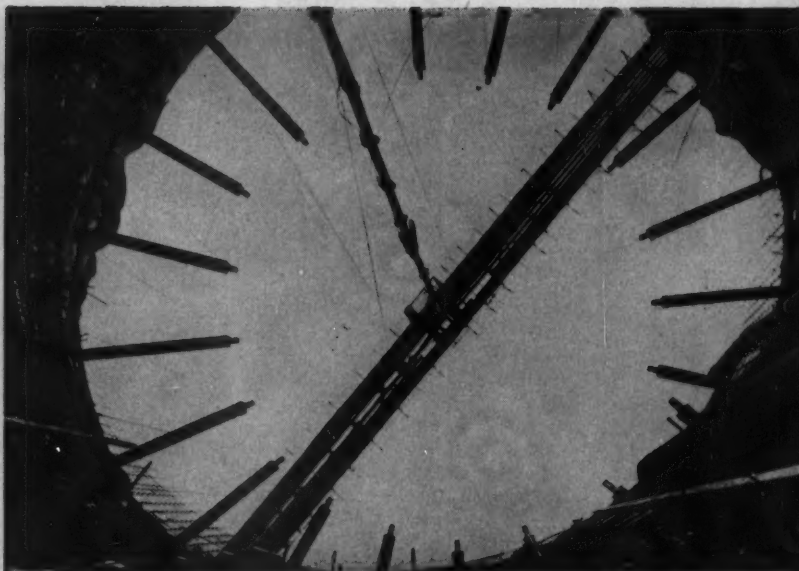
Two cranes walked the exterior cage into place. Then, 19-ft-long Bethlehem DP2 sheetpiles were driven part way down with a McKiernan-Terry 9B3 hammer on a P&H crawler crane. A Traxcavator dug out dirt inside the cofferdam and loaded a skip on a crane. While excavation proceeded, the supporting cage and sheetpiles were positioned.

The interior cofferdam was driven to bedrock in the same way. Both cofferdams remain permanently in place.

The contract also calls for construction of an underground launch control center and connecting tunnel on each silo site. These facilities also are being constructed as an open cut in the same way as the silos. But once they are enclosed in concrete, they will be covered over.

Elwyn W. Simpson and Charles F. Palmetier are project manager and assistant project manager, respectively. The job is under the direction of the newly formed Corps of Engineers ballistic missile construction office, headed by Brigadier General Alvin C. Welling. Lt. Col Sidney Stern is area engineer.

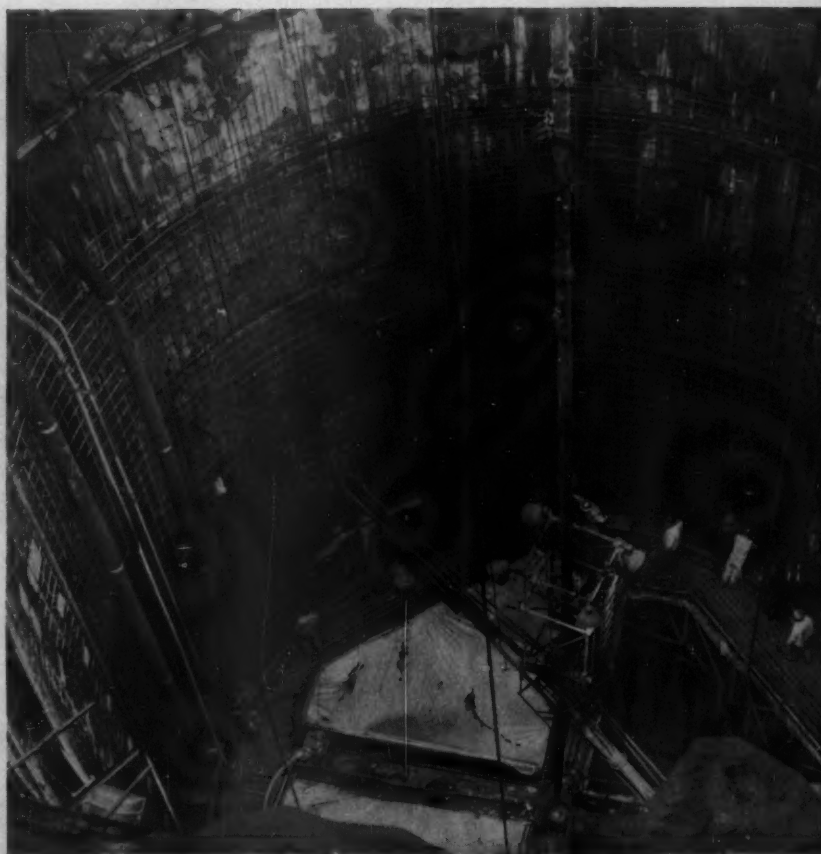
A description of how the contractor concreted the walls of the silo with all-steel slipforms and a Pumpcrete machine follows.



OVER THE BRIDGE—Pumpcrete pipe runs halfway across a double steel beam bridge that spans a silo, then takes a 90-deg downturn at center.

For Plattsburgh Missile Silos:

Versatile Pumpcrete



UNORTHODOX concreting technique also are helping to speed construction of the 12 missile silos around Plattsburgh, N.Y. (See story on excavation starting on p. 101.) Despite freezing weather, the joint-venture group managed by Raymond International poured the first three silos in five weeks.

The project is the first at which all-steel slipforms have been used to pour the walls of missile silos. Other noteworthy features of the job include a hydraulic jacking system that raises forms as much as 30 in. per hr and the Pumpcrete system that is placing concrete.

Two continuous pours are required to complete the walls of a typical 57-H-ID, 180-ft-deep silo. The first pour covers a distance of

125 ft from the bottom of the silo to its haunches; the second pour covers the remaining 55 ft to the top. Minimum wall thickness in the lower section is 2½ ft. From the haunches to the surface, wall thickness increases to a maximum of 9 ft.

The contractor beats the bitter weather by spacing butane heaters around the bottom of the silos. Rising warm air maintains temperatures high enough for curing and workmen's comfort.

From the time the base slab for a silo is poured, practically all work is handled from platforms hung from 14-in. steel beams that cantilever over the rim of the hole.

These cantilevered beams, or

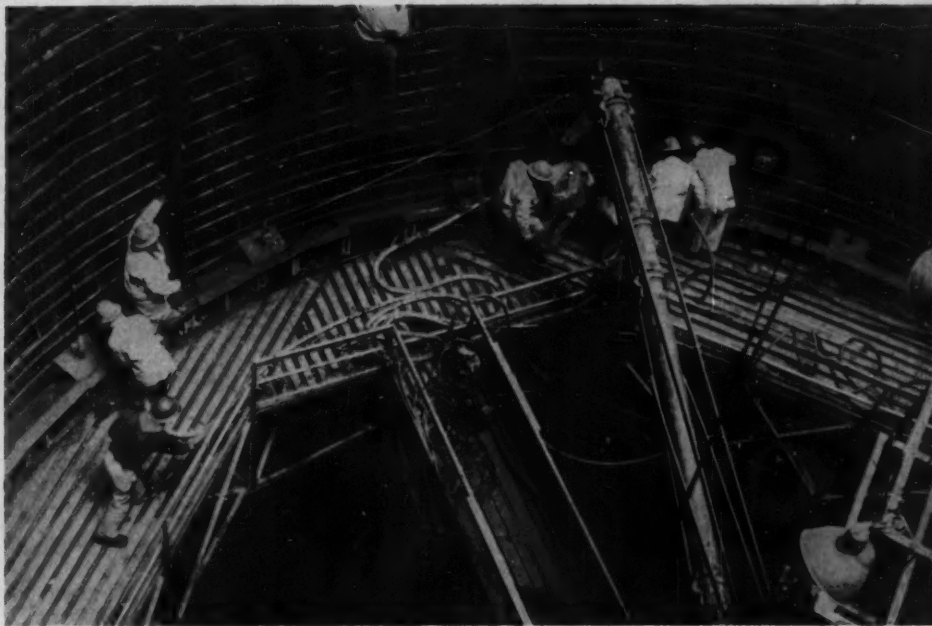
outriggers, are anchored to concrete bases spotted around the rim of the silo. Massive 16-ton concrete counterweights straddle the beams. Wood wedges are inserted between beams and counterweights to make a tight fit. The blocks are portable so that they can be moved to other silos later.

Because of the unevenness of the ground surface, outriggers can not be spaced the same distance apart or at the same level. But the ends of the outriggers all are located accurately on the circumference of the same circle.

Crews place reinforcing steel from a circular scaffold that hangs from four of the outriggers. Workmen move the scaffold up

continued on page 110

System Feeds All-Steel Slipforms



OUT TO THE WALL—Workmen rotate counterweighted pipe on the swivel by pulling it with rope and walking it around the form. An elephant trunk at the end of the pipe directs concrete to pour areas between the form and the silo wall.

DOWN THE SILO—The 8-in.-dia pipe drops vertically to a swivel supported by a frame suspended from winches at the rim of the silo. At the swivel, the pipe bends horizontally again and extends to the silo wall. As the slipform climbs, vertical pipe sections are removed and the frame is raised.

Every year — **CEDARAPIDS COMMANDERS GET BETTER AND BETTER**



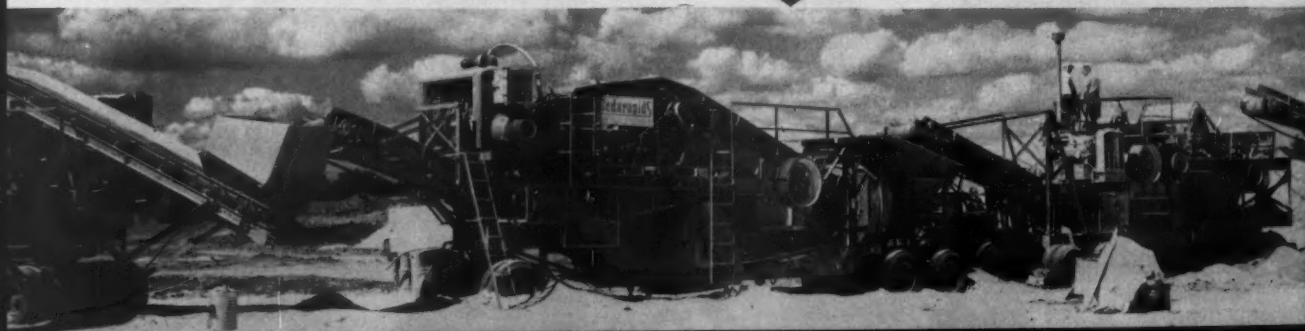
Maschuda Construction Co. uses Commander engineering advancements to produce 270 TONS PER HOUR OF 3" MINUS WITH 65% CRUSH

When a prime contractor requires big hourly tonnages of aggregate for a 16-hour a day operation, and his raw material is highly abrasive sandstone, he needs the very best equipment available. That's why a new Cedarapids Commander was the natural selection for Maschuda Construction Company, of Evans City, Pennsylvania, for producing 270 tons per hour of special sub-grade and stabilized shoulder material for the new 4-lane Pennsylvania No. 22, stretching out in the distance in the picture above.

To meet specifications for the special sub-grade material, Maschuda teamed his new Commander with a Cedarapids Single-Jaw Portable Primary Crushing Unit. The jaws on the Primary were set at a 4" opening. The new 1236 jaw crusher on the Commander plant was set at 3" and the secondary 3025 roll crusher was set at 2".

To balance the crusher load on the Commander, the top deck of the screen had 4" openings and the bottom had 3" openings. The 3" higher side sheets of the screen increased screening capacity and efficiency in handling this large size material. Though not shown, Maschuda generally used a 10-yard surge bin to keep his equipment working at peak production and avoid shut downs caused by truck delays.

Here's another new Commander with a 1236 hydraulic jaw crusher, owned by Maudlin Construction Company, Webster City, Iowa. On this job, it is used as a secondary crusher in conjunction with a Cedarapids Twin Jaw Intermediate Crushing and Screening Plant and a Cedarapids 4812 Screening Unit.



**Constant engineering refinements
of the field-proved Commander design
give you a plant that
continues to out-produce your competition**

When the first Cedarapids Commander was designed, it was an immediate success for low-maintenance, high-production performance. Eight years and thousands upon thousands of low-cost tons later, the proven basic Commander design is still the most productive and profitable on the market for its size.

To make this big producer even better, Cedarapids engineers go into the field to watch Commanders at work, test them under all conditions, and without changing the basic design, search out the engineering refinements, modifications and improvements that give you increasingly better performance at lower costs.

**These Recent Commander Improvements
Help You Get Lowest Cost Per Ton**

• Bigger jaw crusher, 12" x 36" size, means you can feed larger material to your plant. A new hydraulic adjustment mechanism permits quick, simple changing of the discharge opening of the jaws to greatly reduce delays of manual adjustments. Also eliminates several wearing parts to reduce maintenance.

• Larger grizzly openings (increased from 8½" to 9½") handle the larger size material for the jaw crusher.

• Closer control of feed material is now possible with a new reciprocating feeder designed for adjustment in ½" increments. Also available is a remote control spring-loaded feeder gate, to allow a large size boulder to pass through without damage to the gate. This new feeder gate can now be raised or lowered from the operator's platform, without emptying the feeder, permitting the operator to control an even, steady, high capacity flow of material without surges.

• Higher capacity secondary crushing results from the improved design of the roll crusher feed hopper which assures more even distribution across the roll faces and reduces uneven wear on the shells. Material drops squarely so its speed of falling forces it farther between the rolls. This permits faster feeding for greater output.

• Improvements in Horizontal Vibrating Screen

design, with side sheets 3" higher, permit 3" more material and larger feed to pass under the power unit. The Commander screen easily handles the high output of the plant for balanced production and grades it accurately to meet specifications.

• The main drive shaft of the plant has been newly engineered to decrease the bearing load by repositioning the sheave and bearing.

• Guards for V-belts have been improved to assure maximum safety for your workers.

• Many other minor improvements, the result of field experience and contractors' suggestions, have been incorporated throughout the years to make the Commander stronger, easier to adjust and operate, to reduce vibration, to eliminate unnecessary weight, and to produce more profitably for every owner.

Today, there are more Cedarapids Commander plants in the field than any other portable unit built. This means there are more dealers and servicemen trained in properly servicing this model which remains basically the same year after year. Commander plants are no sideline for a Cedarapids Dealer. His parts stock for this popular model is greater than for any other plant in the field. It will pay you in increased profits to talk over Commander advantages with your Cedarapids Dealer. Call him today.

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HERE'S BIG NEWS for users of big scrapers! The new Euclid S-24, with payload capacity of 80,000 pounds and 24 yds. struck capacity (32 yds. heaped), is ready for your big yardage projects.

Powered by a 432 h.p. engine with Torqmatic Drive, this new "Euc" is 'way ahead of even the newest big single-engine scrapers. Have your dealer show why this S-24 belongs in your profit picture and can be your ace-in-the-hole for that next bid!

EUCLID Division of General Motors, Hudson, Ohio

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FOR MOVING EARTH, ROCK, COAL AND ORE

EUCLID S-24

**OBSOLETE "NEWEST"
SINGLE-ENGINE
OVERHUNG SCRAPERS**



432 HP... 80,000 pound PAYLOAD



SLIPFORM—For easier handling, slipform consists of truss-braced quadrants.

CONTROL SYSTEM—One workman directs slipping from panel at top of the form.



PUMPCRETE FEEDS SLIPFORM...

continued from page 105

and down with hand winches. As soon as the reinforcing steel for the first pour has been placed, the slipform is assembled at the bottom of the silo.

All-Steel Slipform

Vermont Structural Steel Co. of Burlington fabricated three all-steel forms for the project. Each form will be used four times.

Steel forms were selected over conventional wood forms for two reasons: they create less friction when in contact with concrete; and the forms will last the life of the job without repair or resurfacing.

Each circular slipform has a 6-ft-deep smooth steel plate face. Usually, slipforms for missile silos are only 4 ft deep. In this case, the extra 2 ft help the contractor to cope with winter concreting problems. At the low temperatures prevalent on this job concrete takes a longer time to attain initial set, and accelerating agents are prohibited. The longer form provides additional support and permits faster slipping.

To simplify handling, each form is built in four truss-braced quadrants, and each quadrant is made up of five 8-ft units. Face plates on each of these units are separated by Neoprene strips that allow for mechanical adjustments while a form is being assembled. The strips also permit contraction and expansion resulting from temperature variations.

Steel flooring on top of each form serves as a working platform. Workmen can walk around the circumference of a form or

cross from side to side on bridges. The bridges also act as stiffeners.

To minimize friction during the slipping, diameter of the forms tapers slightly from 52 ft 2 in. at the top to 52 ft 1 in. at the bottom.

Each form has removable panels on its plate face so that it can slip past objects that project inside the concrete line. Panels are removed as a form approaches a protruding object and replaced after it passes by.

Jacking the Slipforms

The mechanism for slipping the forms up a silo consists of 20 climbing rods suspended from the outriggers and the same number of hydraulic jacks bolted to the top circumference of a form. The jacks climb up the rods, pulling the forms up with them.

Before lowering a form into a silo, the contractor tests the jacks and hydraulic equipment on a fully assembled form on the ground. Then crews dismantle the form into its quadrants and they are lowered separately to the bottom of a silo and bolted together.

While a form is being assembled, 20 1-in.-dia steel climbing rods are hung from the outriggers. Handled in 24-ft lengths, these rods are coupled so that they are completely smooth. Assembly of the hydraulic equipment also is simple because the contractor substitutes hosing and quick couplings for metal piping.

Concreting begins as soon as slipform jacks and climbing rods are joined in a silo. Basically, the

operation calls for jacking the forms upward in 1-in. increments as concrete is placed.

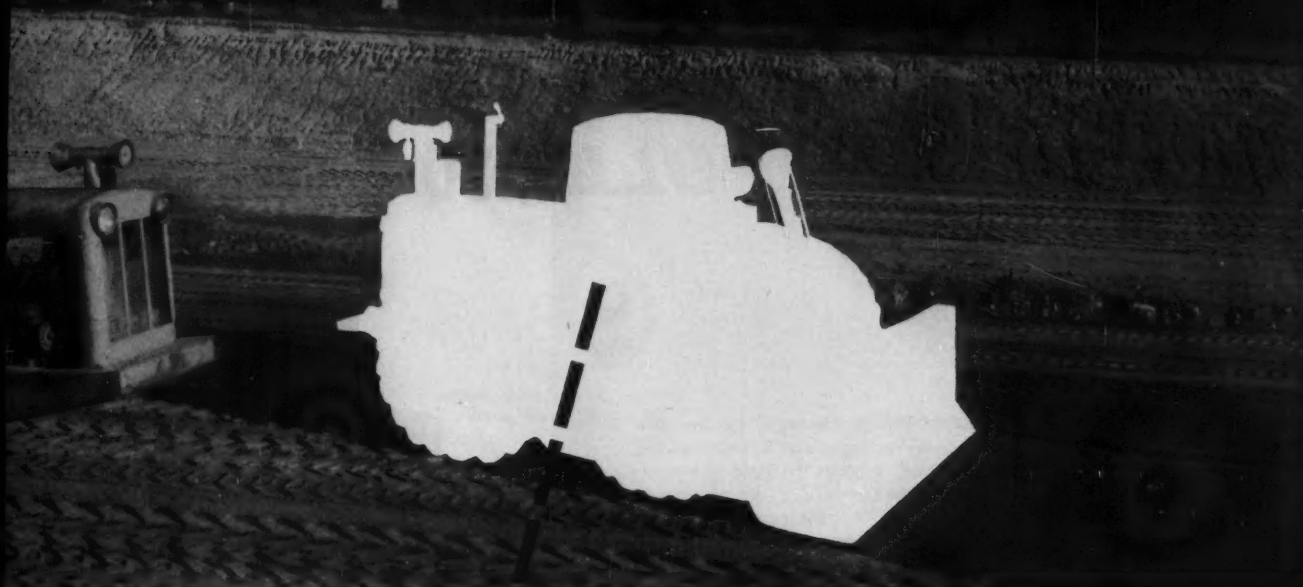
Each jack has an upper and lower set of jaws so that it can climb up the rod without sliding back down. When hydraulic pressure is applied to a jack, a vertical piston is locked into position by the grip of the lower jaws on the rod. At the same time, cam action releases the upper jaws. The jack casing is forced upward, carrying along the attached slipform.

After a jack travels 1 in., hydraulic pressure is released. The upper jaws lock, the lower jaws unlock, and a spring retracts the piston to its original position. The complete cycle takes about 1 min. After a short waiting period, jacking is resumed. The length of the waiting period depends upon the speed of slipping, which varies according to conditions.

The jacks are designed so that they can oscillate up and down. The feature prevents the forms from bonding to freshly-poured walls when a prolonged interruption in the placement of concrete occurs.

As a slipform climbs a silo, it is guided by five vertical 5-in. channels positioned during the placement of reinforcing steel. The channels are tied to the reinforcing and braced by ring beams that retain the rock walls. Because their webs are flush with the concrete wall, they serve as rails for the forms. Elevation marks on the channels are used to check the position of the forms. If one

continued on page 115



There's a NEW tractor in your production picture

Take a close look at this new LeTourneau-Westinghouse C Tournatractor®. Here's new V-Power performance... new faster speeds... new hydraulic control... new agility. All offer a new high in production efficiency for your tractor assignments.

Since the first Tournatractor was put to work over 14 years ago, knowledge gained on every possible tractor application has led to continuous improvement in mechanical efficiency and performance. Result: with today's new, V-Power Tournatractor you get the only thoroughly job-proved, rubber-tired tractor available for heavy-duty work.

Quick facts on the NEW V-Power C Tournatractor

ENGINE: New GM V-Power diesel (6V-71) producing 218 hp.

TRANSMISSION: Power shift, air-actuated with torque converter, 4 speeds forward to 18.5 mph, 2 reverse to 6.2 mph.

CONTROL: New, efficient high-pressure hydraulic system offers instant, effortless control of attachments.

POWER TAKE OFF: Mechanical, SAE std. 1400 rpm.

DIMENSIONS, w/o attachments: 13'6" long, 10'6" wide, 7'8" high (to top of exhaust stack), 15 3/4" ground clearance, 6' wheelbase.

WEIGHT: 34,000 lbs. (with bulldozer only).

ATTACHMENTS: Bulldozer and Angledozer® blade, coal blade, rock blade, snow plow, front and rear push blocks, root rake, rear-mounted RR coupler.

Before you buy your next tractor, get complete details on the NEW Tournatractor. Your LW Distributor will be happy to demonstrate.

CT-2353-G-1



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

Circle 111 on Reader Service Card



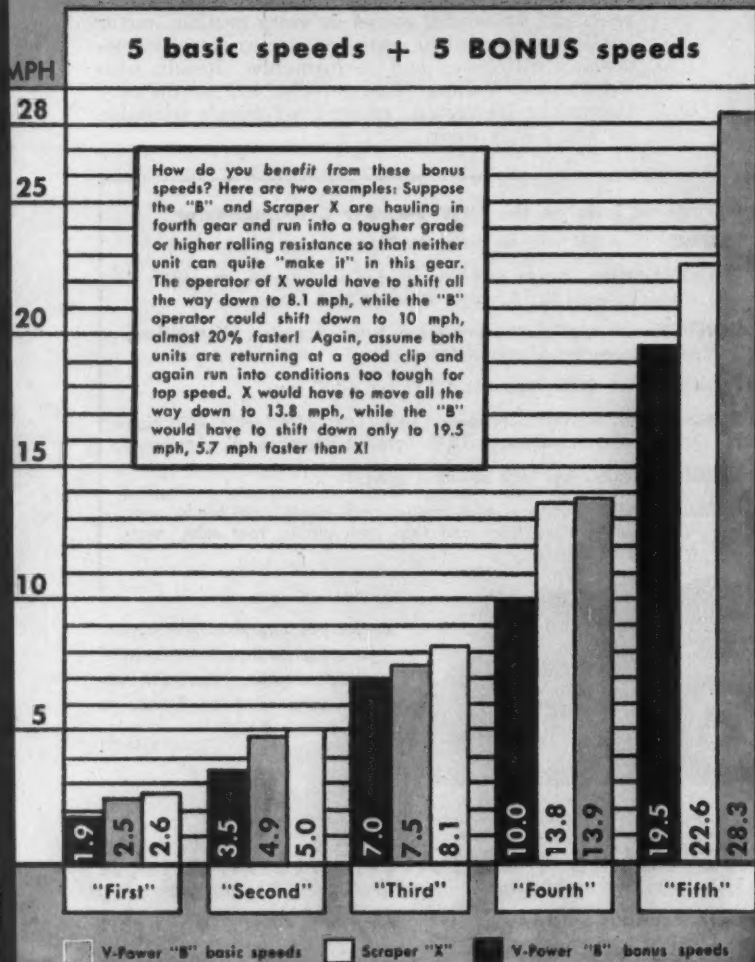
POWER B 'PULL'

430 horsepower...

P-o-w-e-r-f-u-l is the word for the new LeTourneau-Westinghouse B Tournapull®.

With 430 "horses" under the hood, it leads the field in power-weight ratio. Each hp has to power only 320 lbs of loaded weight, as compared to an average 374-lbs-per-hp for all other single-engine scrapers in this size-and-power category! To you, this means more live power to get out of the cut faster... hit top-rated speeds quicker on the haul... cut minutes off cycle-time. And, where conditions are right, there's ample power here to move two loads every trip, with LW tandem scraper operation! That's not all. Look what happens when 430 hp goes to work through the B 'Pull's sensational new 10-speed transmission:

HIGHER SPEED THROUGHOUT THE CYCLE



General Motors 12V-71 engine produces 430 hp at 2100 rpm

Automatic power-transfer differential keeps you going when going gets tough

Easy-shifting, high-low range 10-speed transmission (see chart at left)

Compare the V-Power "B" with any other single-engine scraper in its size class. You'll find it offers you the best combination of price, capacity, and power on the market today. Your LeTourneau-Westinghouse Distributor has the figures to prove it. Why don't you phone him today?

...28.3-mph speed...29 yds heaped

(UP TO 58 YDS
IN TANDEM)

Two-speed steer action: slow, "no-flip" turn
while hauling . . . quick, sharp turn on fill

LW fingertip "electrics" control
steering, and single or tandem scrapers

Low, wide, fast-loading Fullpak® scraper:
23 cu yds struck, 29 yds heaped

Add a second scraper any time for
tandem profits (simple, plug-in jacks,
universal swivel-hitch available)

Prime-mover turns 180°
(from 90° right to 90° left)
in only 8.6 seconds . . .
45% faster than before

Final-drive gears 5¼" wide . . . 40%
larger than ever before available

Biggest brakes in the industry . . .
1648 sq in. of braking surface on each wheel

*Trademark BP-2322-DC-2r



LETOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

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...“Well, the boss said never pour concrete without vibrating it.”

“Now take this STOW EU Vibrator. The boss put these on the job because they're one of the best all round vibrators you can get. Plenty of wallop in that 1 HP motor. It delivers 10,000 VPM. And that head is just the thing for narrow forms, pre-stressed work, or just vibrating concrete into tight corners. That's why we always have these STOW EU's* around on the job. You can use 'em for just about any kind of vibrating. And look how easy they are for one man to handle!”

The man is right! Next time you pour concrete, put a STOW EU Vibrator to work!

Unusual application? You bet! And we'll bet you'll do better with a STOW vibrator next time you pour concrete on *any* job. Call your nearest STOW distributor for a try out . . . or contact us directly!

Complete line of Gasoline operated and motor-in-head vibrators, portable concrete grinders, ceiling grinders, rotary trowels, vibrating screeds, and tampers. Request Catalog 610 from your distributor, or write STOW.

*Available with shafts from 2' to 21' long and with 4 different vibrator head sizes.



STOW MANUFACTURING COMPANY

31 Shear St., Binghamton, New York

Circle 114 on Reader Service Card

PUMPCRETE FEEDS SLIP. FORM *continued from page 110*

side of a form gets ahead of the other, jacks on the low side are operated with manual pumps until the form is level again.

Two factors influence the rate at which a form can be raised; it must move fast enough to prevent bonding; but it can't move so fast that plastic concrete is left unsupported.

While 15 in. per hr is the average rate of slipping, a maximum rate of 30 in. per hr has been maintained for a 2-hr period. Modifications are planned that will allow forms to climb 60 in. per hr.

When concreting begins in one of the 12 silos, slipping is directed from a control panel on top of the form. The hydraulic system can be operated by one man, and he needs no specialized training. A gage shows operating pressure at all times and a simple timer indicates when slipping should be resumed.

An electrically powered hydraulic pumping unit is mounted on each form underneath the floor. The system has a maximum design pressure of 5,000 psi and a normal operating pressure of 1,000 psi. The jacks have a 2-ton working capacity and a 3-ton maximum capacity.

The hydraulic system was designed jointly by the contractor and Elgood Hydraulics Corp., Brooklyn, N.Y. Elgood also supplied the necessary equipment.

At most other missile bases, slipform concrete has been placed by crane and bucket. At Plattsburgh, the contractor abandoned conventional placing practices and set up a Pumpcrete system. Here's how the system works:

A 55-yd-per-hr Pumpcrete machine located on the surface near the rim of a silo that is to be lined is charged with ready-mix concrete. The machine's double 8-in. pistons pump concrete with a maximum 3-in. slump through an 8-in. pipe. The pipe follows an irregular course from the Pumpcrete machine to the pour area inside the silo.

For a typical silo, the pipe runs halfway across a double-steel beam bridge that spans the top of the hole. At the center of the bridge, the pipe makes a 90-deg downturn to a swivel supported by a frame that hangs in the center of the silo, independent of the

continued on page 118

Hook an OWEN Clamshell Bucket to your crane and you're sure of superior performance and longer life. For OWEN Buckets have exclusive super-efficiency and long-lived features you won't find in ordinary clamshells.

For instance:

- Block and tackle type reeving
- One-piece head construction
- Recessed lips
- Single main shaft
- Riveted bowl assembly

For over half a century OWEN has been building clamshell buckets—tailored to meet the requirements of "men who move the earth the world over".

So team your crane to the bucket with the BIG BITE that's JUST RIGHT for every job!

Write today
for the money-saving
facts and figures.

THE
BIG
BITE

THAT'S
JUST
RIGHT!

The
OWEN
BUCKET COMPANY
BREAKWATER AVENUE • CLEVELAND 2, OHIO
BRANCH OFFICES: New York • Philadelphia • Chicago • Berkeley, California • Fort Lauderdale, Florida
Circle 115 on Reader Service Card



G-900 TRACDRILS with "Hydra-poise" knee-action have unmatched maneuverability and stability to sink blast holes in any formation. Independently operated, extra-long crawlers provide 1350 square inches of ground contact. Two sets of grouped controls — one at turret, the other at boom end — save time and steps for driller.



THIS BATTERY of CP-600 "Power Vane" Rotary Compressors feeds air to a group of G-900 Tracdrills. They supply the "Go-Power" for the toughest jobs with portability and "hands-off" operation.



G-900 TRACDRILS

**PROVE THEIR POWER AND STAMINA IN THE
TOUGHEST TERRAINS AND FORMATIONS . . .
AND THEY CAN DELIVER MORE BLAST HOLES
PER SHIFT FOR YOU!**



When you're stuck with treacherous footing and hard rock, you have a job for Chicago Pneumatic G-900 Tracdrills and "Power Vane" Rotaries.

Operators find the new G-900 a driller's drill. It's got everything a driller expects from a high production rig... plus some real exclusives, too! It can drill directly alongside tracks with 180° full swing. It handles horizontals 11 feet high at the face, or snake holes at ground level. And you can't beat the G-900 for safety. Release the throttle and

heavy-duty brakes lock automatically . . . keep drill from shifting or creeping . . . hold hard on really bad ground.

If you back-up your G-900's with the rugged, always reliable CP-600 "Power Vane" Rotary Compressors that have the "Go-Power" to meet every air demand, you can lick the toughest formations you'll ever find. Write for Bulletin SP-3267 on the revolutionary G-900 Tracdrill to: *Chicago Pneumatic Tool Company, 8 East 44th Street, New York 17, New York.*


Chicago Pneumatic

TRACDRILLS • AIR COMPRESSORS • PNEUMATIC TOOLS • AIR WRENCHES • REICHdrills

Circle 11 on Reader Service Card

FEBRUARY, 1961

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PUMPCRETE FEEDS SLIPFORM . . .

continued from page 115

form. The frame is suspended from cables that connect to winches on the rim of the silo near the bridge.

At the swivel, the pipe takes another 90-deg turn and extends almost to the edge of the form. Concrete is directed the remaining distance from the end of the pipe to the area between the form and the silo wall through an elephant trunk. One workman rotates the pipe on the swivel by pulling it with a rope and walking it around the circumference of the form. The pipe is counterweighted so that it remains level.

To help direct concrete into the proper place, the periphery of the form is fitted with a plywood skirt. Boxes that are built into the skirt protect the slipform jacks. To keep concrete away from the jacks, climbing rods are covered with pipe sleeves for several feet above the protective boxes. Concrete is vibrated thoroughly to consolidate the mix around the



SLIPPING—Plywood skirt fitted to periphery of the form helps direct concrete into place and protects the jacks that can climb up the rods as fast as 30 in. per hr.

maze of reinforcing bars.

As the form rises, the elephant trunk is shortened by removing sections. When the form approaches the swivel frame, a vertical section of the Pumcrete pipe is removed, and the frame is raised with the winches on the surface. Then vertical and horizontal sections are connected again.

As a safety measure, the vertical pipe is not supported from the bridge. In effect, it stands on the frame, which is kept under constant tension by overhead cables. In addition, a safety cable

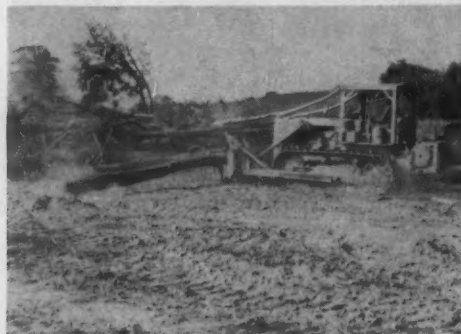
that connects to each pipe section eliminates the danger of dropping a section if a pipe joint should fail.

Finishers work from a scaffold mounted under the form to apply final touches to the concrete wall. The scaffold also allows other workmen to uncouple lengths of climbing rod for reuse in other silos.

Concreting halts temporarily at the haunches of the silo, and construction joints are installed. After placing steel and making adjustments, slipforming is resumed to complete the wall.

FLECO® FACT FILE

*Reports on Fleco Rock Rakes from a
contractor and a sugar estate owner*



Superintendent Viers says, "I am well satisfied and pleased with the job my Fleco Rakes are doing. I like the Fleco Rake better than any other rake I've ever used."

FLECO®

MA, Rock, Root, Brush and Tractor
Rakes • Root Plows • Cab Guards
Rolling Choppers • Stumpers • Fire
Fans • Treedozers • Tree Cutters
Tree Pushers

Clearing of 2,332 acres for Kentucky's newest flood control project at the Rough River Reservoir (pictured left) was completed in the fall of 1960 by Phillips & Jordan. After oak, sycamore, gum, poplar and elm trees were cut, Superintendent Ernie Viers used Fleco Rock Rakes on two D8s, four D7s and four D6s to wind-row unsalable material into piles as shown. Subcontractors on this job also used Fleco Rakes, bringing the total to sixteen. Each crew cleared and piled an average of 10 acres a day. Keeping the piles clean of dirt for a more complete and faster burn was an important advantage in using Fleco Rakes. Later when the piles were lighted Viers assigned two-thirds of his Rake-equipped tractors to punch piles and police the burning, as shown upper right.

See your Caterpillar-Fleco
dealer for more information
or write direct . . .

FLECO Corporation

P. O. Box 2370, Jacksonville, Florida, U.S.A.
Fleco International, Inc. • Fleco Overseas Limited
P. O. Box 890, Nassau N.P., Bahamas



The Medine Sugar Estate on the island of Mauritius owns, among other Fleco equipment, six Fleco Rakes. The President and owner of the Estate says: "The Fleco Rock and MA Rakes owned by my Estate operate in very severe conditions as the island is a volcanic one. I have seen them working for many years and I do not hesitate to declare that they give me entire satisfaction."





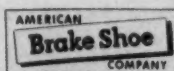
YOU CAN KEEP THIS END BIT ON THE BLADE 2 TO 3 TIMES LONGER

Our Simplex Dipper Teeth proved so successful that we decided to make end bits out of the same material. (It's Amsco "CS"—a specially heat treated alloy steel.)

Dozing in dirt, sand or rock, operators say our end bits are lasting 2 to 3 times longer than bits made of other materials. They hold a sharp edge until completely worn out—not just partly worn. And they're very tough to bend or break.

Suggestion: First chance you get, order a set of Amsco End Bits from the nearest Amsco Dealer. If you don't know who he is, write us, and we'll send you his address plus a copy of the Amsco End Bit Buyer's Guide.

SEND
FOR
THIS
END
BIT
BUYER'S
GUIDE



AMSCO

American Manganese Steel Division • Chicago Heights, Ill.
Other Plants in: Denver • Los Angeles • New Castle, Dela. • Oakland, California
St. Louis. In Canada: Joliette Steel and Manitoba Steel Foundry Divisions

Circle 119 on Reader Service Card

NEW WHITE TANDEM NEW LOW PRICES

An all-new concept in economy-design, these big new WHITE 42008 Series construction models are especially engineered to solve the problem of rising operational costs and to provide maximum payload ability.

Lighter in weight yet rugged all the way through with high-strength, heat-treated alloy steel frame, quality nut and bolt construction, and extra capacity drive components. Built to handle the toughest jobs with less down time,

lower operating and maintenance costs. And at a lower price than ever!

These new WHITE construction models are the biggest heavy-duty truck values on the market. *Built to your exact operating requirements.* Designed to give you the competitive edge you need to lower your costs—increase your profits—in '61. Call your White branch or distributor!

THE WHITE MOTOR COMPANY,
CLEVELAND 1, OHIO

Branches, distributors, dealers in all principal cities

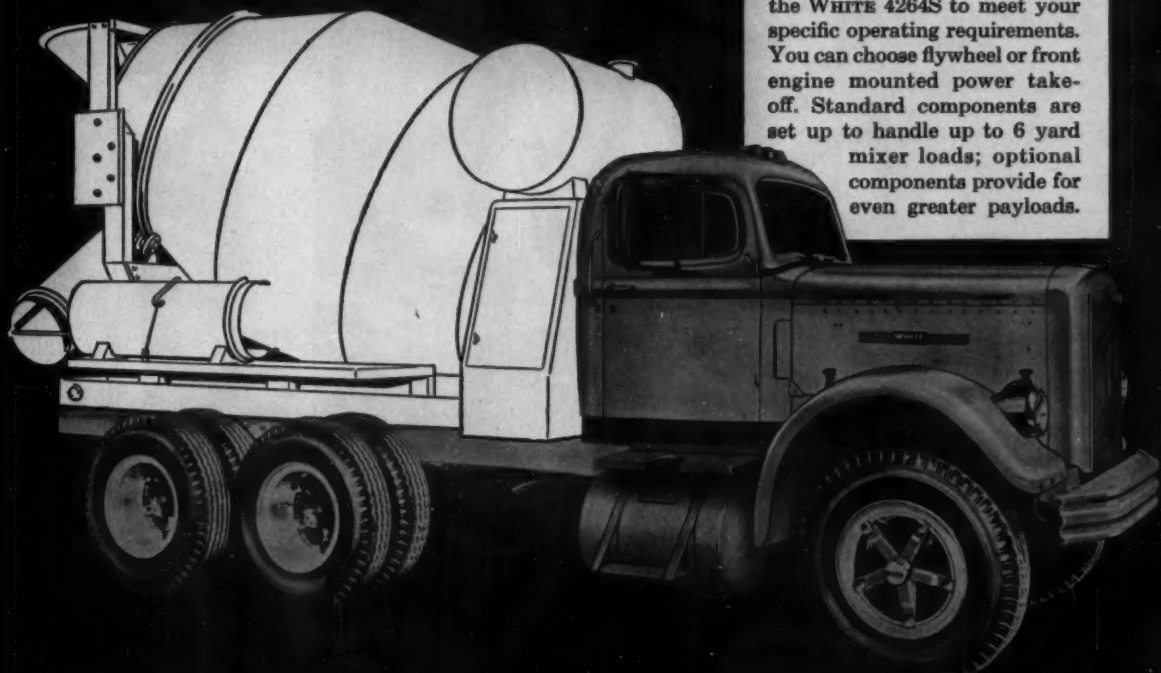
Powered by the job-proven Super Mustang gas engine or the Cummins "C" Series diesel engine, the WHITE 4264S handles big dump loads easily at lower cost per yard.



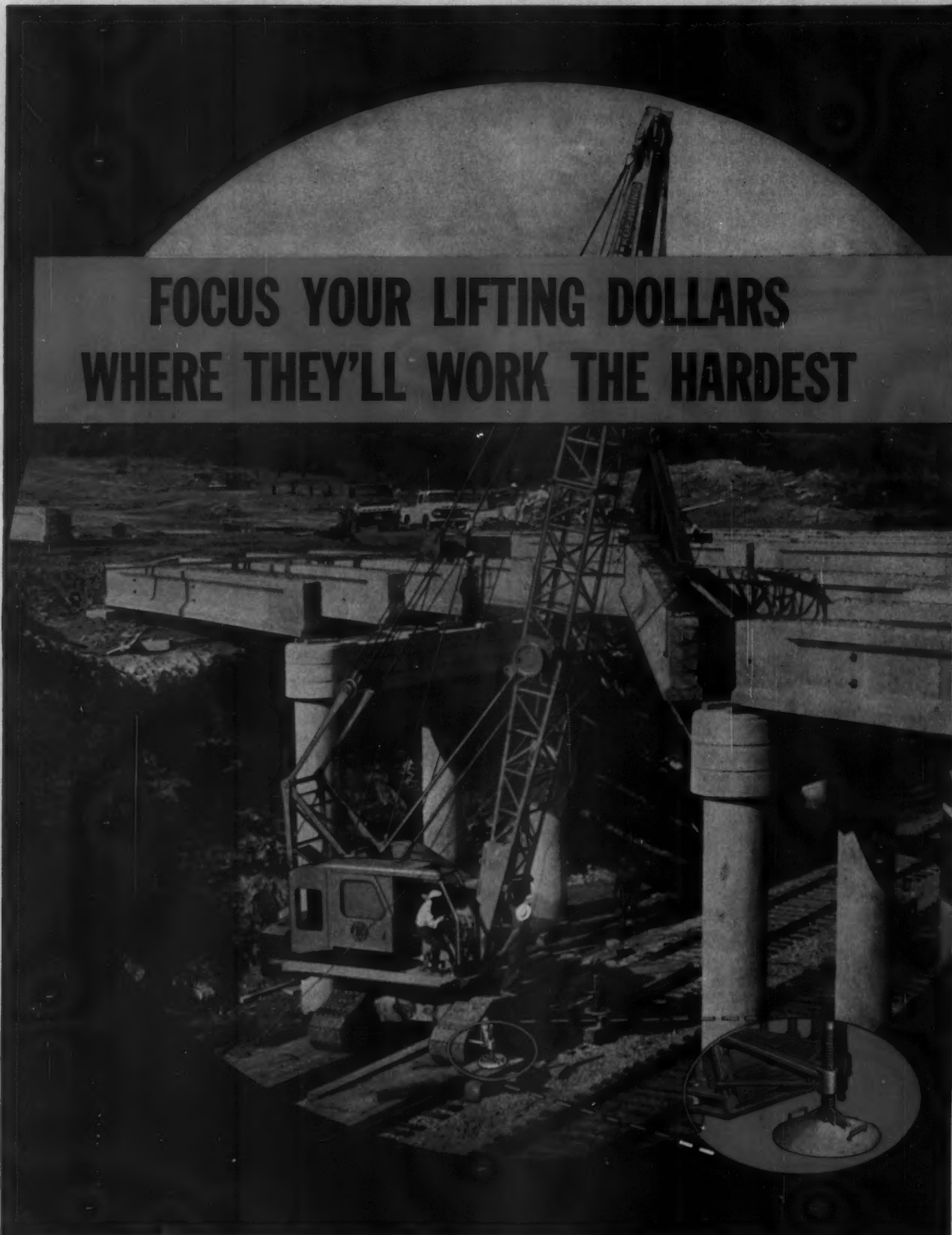
WORLD LEADER IN  HEAVY DUTY TRUCKS

WHITE

Flexibility in selection of components permits you to tailor the WHITE 4264S to meet your specific operating requirements. You can choose flywheel or front engine mounted power take-off. Standard components are set up to handle up to 6 yard mixer loads; optional components provide for even greater payloads.



AVAILABLE WITH WHITE SUPER MUSTANG GAS OR CUMMINS "C" SERIES DIESEL ENGINES



FOCUS YOUR LIFTING DOLLARS WHERE THEY'LL WORK THE HARDEST

KOHRING 545 SPRAWLER, owned by James T. Triplett Inc. of Chester, S. C., eases heavy precast bridge member into place. Machine has pivoting outriggers (see inset) that enables it to outlift its own working weight by 14%. Maximum lifting capacity with outriggers set: 90,000-lbs.

Look to Koehring

Look over the big Koehring lineup of heavy-duty lifting cranes: crawler, Sprawler, truck and Cruiser models. They're heavy duty through and through, built to outlast and outlift other makes for years and years. Here's why . . .

BUSINESS END gives the operator plenty to work with: automatic power boom lowering, power load lowering, pendant boom suspension, boom limit stops, pin-pad boom connection. Makes for faster, safer load lifting and spotting . . . quicker, easier setups.

MAIN MACHINERY delivers smooth, direct power flow. Shafts are driven by cut steel gears, rotate freely on anti-friction bearings. Side stands are line bored in place to keep shafts in perfect alignment.

A MOUNTING FOR EVERY NEED. Self-cleaning, heavy-duty crawlers and rugged truck and cruiser models to meet job requirements . . . deliver maximum load stability with minimum maintenance.

SEVEN CRAWLER MODELS
FROM 10 to 95-TON CAPACITIES

TWO SPRAWLERS
30 and 45-TON CAPACITIES

FIVE TRUCK MODELS
FROM 18 to 55-TON CAPACITIES

TWO CRUISER CRANES
18 and 25-TON CAPACITIES

See your Koehring distributor . . . or write for a bulletin on the crane of your choice.

KOEHRING
DIVISION OF KOEHRING COMPANY
Milwaukee 16, Wisconsin

**MORE WORK CAPACITY . . . MORE
PROFIT PER DOLLAR INVESTED**



Milwaukee Bridge Company's Koehring 305 Truck Crane hoists steel girder for bridge deck. The 305 has a maximum lifting capacity of 25-Tons.



Koehring 605 . . . 36-Ton Crawler . . . pours concrete on Texas Dam project.



Koehring 445 Truck Crane...45-Ton capacity... speeds overpass work on highway job. Ramsor Bros., Castle Rock, Colorado is the contractor.



Euclid TS-24 and TC-12 pusher (top) work in spongy pit. Cat No. 619 (bottom) loads in drier cut.

Earthmovers are working night and day to build a roadbed through 20 mi of swamp. They must take 6,500,000 yd of fill from 65 extremely wet borrow pits on both sides of the right of way.

Specialized

TWO SPECIALIZED scraper spreads, each organized to handle different borrow pit conditions, are working day and night to get 6,500,000 yd of road fill from a swamp-infested section of South Carolina.

Dickerson, Inc., contractor for the \$4.3-million project, must open up a total of 65 borrow pits to get material for a 20-mi stretch of Interstate 26 between Orangeburg and Charleston.

The contractor's specialized scraper fleets are working independently but at the same time. One spread operates in pits where the going isn't quite so tough.

In the soggy pits, Dickerson assigns a fleet of seven twin-engined Euclid TS-24 scrapers and a Euclid twin-engined TC-12 pusher. The front and rear engines on the scrapers and the twin-engines of the pusher provides a total of 652-hp—enough to shove scrapers through soft ground at an average loading time of 40 sec.

In drier pits, four Caterpillar 619 scrapers, two DW21's and one Euclid S-18 team up with another TC-12 pusher to form a fast-mov-



MUCK REMOVAL—Koehring 308 crane with Hendrix 3/4-yd dragline scrapes 2 to 3 ft of unsuitable material from the right of way. The material, which is often underwater, is heaped at either side of the roadbed. It will be worked into the slopes. Wooden mats support crane.



Working at night, a loaded scraper roars into a floodlighted fill area. Earthmovers run 22 hr a day.

Spreads Work in Wet Borrow Pits

ing, highly maneuverable spread. When necessary, a Cat D9 and an Allis-Chalmers HD-20 is used with either spread when haul distances are short and scrapers arrive too fast for one pusher to handle alone.

Many Borrow Pits

There is only one cut of any consequence on the job, and that's 6 ft deep and about 1,000 ft long. The rest of the fill material comes from the 65 borrow pits opened on both sides of the 350-ft-wide right-of-way. The pits generally are located about a ½ mi apart, except at interchanges where pits are located at all four quadrants.

In size, the pits vary from one acre to 125 acres. They are excavated anywhere from 4 to 18 ft deep, depending upon water conditions and the amount of fill material needed nearby.

Dickerson's two scraper spreads alternate among as many as four or five pits at a time. This shuffling about is the only way to cope with wet conditions, according to project manager Frank Carpenter. When a pit becomes too wet, the

scrapers move to another while the first pit is pumped dry. In the worst pits, at least one 6-in. Jaeger pump is working all the time.

Despite these conditions, production averages about 15,000 yd per 10-hr shift and has gone as high as 20,000 yd a shift. Two crews keep the spreads going 22 hr a day—10 hr during the day and 12 hr on the night shift.

Here's how Dickerson handles the job. First, the contractor removes muck—much of it underwater—from the right-of-way with draglines. Then scrapers and dozers put down a 3-ft-thick base for heavy equipment to move on. Next, fill is built up to 5 ft above ground level in 6-in. lifts.

A Koehring 305 crane equipped with a Hendrix ¾-yd dragline bucket handles the muck removal job. To keep from sinking into the bog, the rig works from four 6x16-ft wooden mats made of 8x8 timbers.

Putting Down a "Floor"

The first job for the scrapers involves what Carpenter calls a "flooring operation" — putting

down a base in swampy areas along the right of way for heavy equipment to work on. This calls for the placement of a 3-ft lift of fill material on submerged or unstable ground.

To do this, a loaded scraper comes as close as possible to the end of a fill, then turns and dumps the dirt alongside the swamp area. Dickerson finds that the twin-engine Eucs are especially adept at the turning and dumping maneuver because the rear power prevents the back wheels from digging in during the turn.

After the scrapers unload, dozers push material ahead into the boggy ground. Six dozers are on the job: two D8's, two D9's, an HD-16, and an HD-21. Once the flooring operation is complete, scrapers place fill in a normal running and dumping manner.

For night work, the contractor floodlights borrow pits and fill areas with Allmand lanterns equipped with their own generators, which are driven by Wisconsin air-cooled motors. Each lantern has six or seven flood-



SWAMPY EARTHMOVING JOB... continued

FILLING—Loaded scraper moves as close as possible to end of fill, then turns and dumps at same time. Dozer will push dirt into bag.

lights. Two or three lanterns are enough to illuminate a sizable area. Between pit and fill, the scrapers rely solely on their headlights.

Between the rough going and the long work day, the equipment takes a lot of punishment.

Maintenance is a problem, but so far Dickerson hasn't suffered too much from downtime. When a shift quits, the operators line up the equipment on the fill. Then service trucks come down the right-of-way with fuel and lubricants.

Dickerson must work the fill area constantly to get the soil dry. This is handled in several ways. When the moisture content is especially high, a sheepsfoot roller works on the fill. The feet of the roller open up the ground and flip up the soil, exposing it to the air. Then the area is bladed with a grader. While the fill is being built up, it is also being aerated and mixed by disks drawn by a Ford diesel tractor.

Tough Grading Job

When the soil is finally dried it becomes hard and flaky, making the fine grading difficult. Dickerson meets this situation by shaving the fill with a scraper that moves slowly ahead with its bowl lowered slightly. Seven Cat No. 12 and 14 graders also handle fine grading and maintain haul roads.

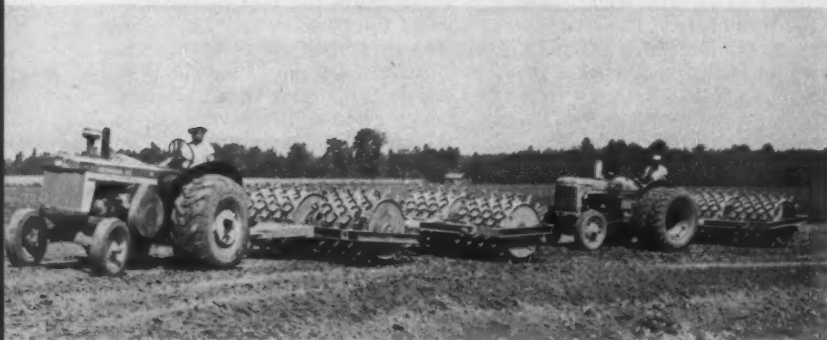
Specifications call for compacting fill to 95% of maximum density. Compaction is handled with sheepsfoot rollers drawn by John Deere and International wheel tractors.

In addition to swampy terrain, the contractor suffered through record rainfalls when their crews began to work. First, a hurricane ripped up the route. Then an extremely wet winter closed down the job for four months, causing the loss of key equipment operators who sought employment elsewhere. Despite these delays, the job is proceeding on schedule and now is about 80% completed.

In addition to Carpenter other key men on the job include George Moser and Lewis Shuler, job superintendents; and Albert Wilfong, equipment manager.



MIXING—Disks drawn by a Ford diesel tractor mix and aerate dirt on the fill. Earth must be constantly worked and dried as it is placed before it can be properly compacted.



COMPACTING—John Deere (in the lead) and International wheel tractors pull sheepsfoot rollers. Specs call for contractor to compact the fill to 95% of maximum density.



every
foot
of
this
trench
is
tough
digging

A trench through unblasted rock, 3 miles long, 10 ft. wide and an average of 16 ft. deep, is a tough test for any hoe. This 2½-yd. Lorain 85A rips out up to 250 ft. of this trench a day for a 72" Dallas water main.

This kind of outstanding hoe performance is typical of what the Lorain 85A can do as shovel, crane, dragline or clamshell as well. Here are a few of its modern features:

Shovel and hoe booms of all-welded, high strength steel box sections.

Square-tubular-chord crane boom. Lighter weight, stronger, for longer booms, greater reaches.

Two-lever, "Joy-Stick" air power controls blend operations for faster, smoother cycles.

"Shear-Ball" connection for "rock steady," smooth swing. No adjustment, maintenance or lubrication problems. Covered by a 10-year warranty.

Three power shafts for simultaneous hoist, swing and travel. Give maximum flexibility.

Air-ease, crawler controls. Air power does the work. Two travel speeds in both directions.

There are many more. Ask your Lorain distributor.

THE THEW SHOVEL COMPANY, LORAIN, OHIO

LORAIN® ON THE MOVE

PLANTS in Lorain, Elyria, and Bucyrus, Ohio.

PRODUCTS—Power shovels, cranes, draglines, clamshells, and hoes on crawlers from ¾- to 2½-yard capacity • Cranes from 7 to 80 tons . . . on crawlers, and as rubber-tire Moto-Cranes, and Self-Propelled Cranes • Rubber tire front-end Moto-Loaders in 11,000-lb. to 18,000-lb. lifting capacity.

OUTLETS—Lorain products sold and serviced by 249 distributor outlets throughout the world.

BIG POWER BIG CAPACITY

new SS-33

For moving heaped loads of 40 yds. or more on long, high speed scraper hauls, the new Model SS-33 has already proved it's away ahead of any other big scraper in productive capacity. Powered by a 12 cylinder G.M. diesel of 432 h.p. with 4-speed Torqmatic Drive, this "Euc" moves big payloads at speeds up to 34 m.p.h. Stability and good weight distribution of the six-wheel SS-33 permit faster safe travel speeds that save time on every cycle. With its new push-out, roll-out ejector this "Euc" is the first super scraper able to dump big loads in a hurry.

Teamed with the TC-12 "Twin" Crawler for push loading, the SS-33 gets a heaped load in its low, wide bowl and is on the haul road fast. This big power, big capacity "Euc" equipment is your best bet for high production and low yardage costs on dams, highway work, other heavy construction and stripping operations. Ask your dealer for specifications and technical data on the SS-33 and TC-12.

EUCLID Division of General Motors, Cleveland 17, Ohio
Plants at Cleveland and Hudson, Ohio and Lanarkshire, Scotland

Maneuverability and 425 net h.p. make the TC-12 with full-power shift tops for pusher work, heavy dozing and ripping tough material.

New radial design of apron and a push-out, roll-out ejector speed up dumping ... gets rid of big loads, even sticky material, fast and clean.



BIG PRODUCTION



43 YARDS
HEAPED



34 M.P.H.
LOADED



432 H.P.
V-12



PUSH-OUT
& ROLL-OUT EJECTOR



EUCLID

FOR MOVING EARTH, ROCK, COAL AND ORE

Keep your Construction Equipment

GOING STRONG EXTRA LONG



POWER RECONDITIONING KEEPS OPERATING PROFITS UP!

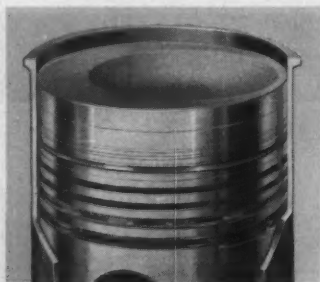
You'll keep your equipment on the job longer between overhauls when you recondition with genuine International Power Packages.

For example, International's thick, solid chrome plating on top compression rings and oil rings resists scoring and scuffing — doubles life of cylinders, pistons and rings. And all International Piston Ring Sets are pre-seated at the

factory to assure maximum power without time wasting break-in.

Restore like-new performance to your equipment now. Order International piston rings or piston and sleeve sets in a complete International-tested, approved and recommended Power Package. International's vast network of 12 parts depots and more than 200 distributor outlets assure you of prompt, reliable service at all times. Power up for profits today!

International Harvester Co., 180 North Michigan Ave.,
Chicago 1, Illinois



**INTERNATIONAL®
CONSTRUCTION
EQUIPMENT**

◀ Circle 129 on Reader Service Card



Only Spencer uses military type underwater tests to determine the relative effectiveness of commercial explosives. These tests are the latest in a continuing research program conducted by Spencer Chemical Company, the pioneer supplier of solid ammonium nitrate as an ingredient in blasting.

Precise new underwater testing method shows . . .

Spencer N-IV And Fuel Oil Produces Up To 7 Times As Much Useful Energy Per Dollar

. . . when compared with gelatin dynamites

How do you measure the true blasting effectiveness of commercial explosives? Unsatisfied with present methods, Spencer Chemical Company and a well known research organization teamed up to discover a better way.

After extensive investigation Spencer adopted underwater testing methods developed through military research. These were found to provide data better related to commercial blasting than any other testing method. As a result, more accurate standards of evaluating the actual useful output of explosives have been developed.

Latest test results show that Spencer N-IV Ammonium Nitrate and fuel oil deliver up to seven times as much useful energy per dollar as gelatin dynamites (see chart at right).

Extensive research has also shown that Spencer N-IV, when mixed with the recommended 6% fuel oil, delivers 20% to 25% more blast energy than equal charges of other solid ammonium nitrate-fuel oil mixtures. There are two main reasons for this: (1) lower density which provides greater ease of detonation, (2) special prill structure which allows fuel oil to be absorbed more evenly.

It costs you nothing to get the full benefits of Spencer's advanced knowledge and experience in this field. Just mail this coupon. No obligation of course.

PERFORMANCE COMPARISON OF BLASTING MATERIALS				
Explosive	Heaving Energy Ft. Tons/Lb.	Shattering Energy Ft. Tons/Lb.	Effective Energy Ft. Tons/Lb.	Useful Energy Ft. Tons/\$
Spencer N-IV and Fuel Oil	423	60	483	14,230
40% Gelatin Dynamite	257	115	372	1,770
60% Gelatin Dynamite	384	84	468	1,800



Spencer Chemical Company
Industrial Ammonium Nitrate Sales
409 Dwight Building • Kansas City 5, Missouri

Without cost or obligation, please send me the latest information on the use of Spencer N-IV and fuel oil for blasting.

Name _____
Firm _____
Address _____
City _____ State _____



J. P. Neill strings 60-inch pipe over with never a breakdown...

Talk about tough pipe jobs! The J. P. Neill Company, Inc., as sub-contractor under Morrison-Knudsen Co., Inc., is shown laying a 60-inch water pipeline through hard rock and open pit coal mines, across two rivers, up and down slopes as steep as 120°. So far, the Dallas, Texas, contractor has moved at a steady clip—1,000 feet a day.

When completed, the new line will provide 75 million gallons of water daily for the city of Birming-

ham, Alabama. It will easily meet the urgent needs of industrial and domestic users.

Before the project started, Gulf engineers helped the contractor establish an effective maintenance program based on clean-working Gulf lubricants and clean-burning Gulf fuels. These products include: Gulflube® Motor Oil H.D., Gulf Super Duty Motor Oil, Gulf Diesel Fuel, Good Gulf® Gasoline, and Gulf Multi-Purpose Gear Lubricants.



Gulf lubricants and fuels help keep equipment delivering top performance as it wrestles 20,000-pound pipe sections over tough terrain.



Olan Jones, right, Superintendent, and Ed Johns, Gulf Sales Engineer, watch closely as a pipe-layer swings into position. No delays have been attributable to fuels or lubricants.

33-mile obstacle course GULF MAKES THINGS RUN BETTER!

What about results? Olan Jones, Supt., answers: "Our pipe-laying tractors, trucks and welders operate 10 hours a day. They've all given top performance. Not one delay is attributable to lubricants or fuels."

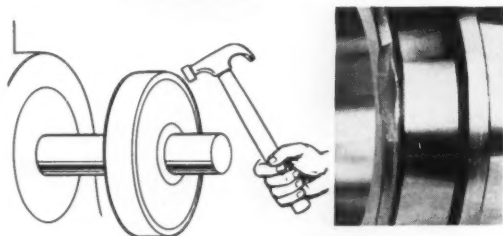
Try Gulf fuels and lubricants on your next project. You'll soon see how Gulf makes things run better! Contact your nearest Gulf office for a quotation. For helpful maintenance tips, and information on Gulf products, write for 88-page "Contractors' Guide."

GULF OIL CORPORATION
Dept. DM, Gulf Building
Houston 2, Texas

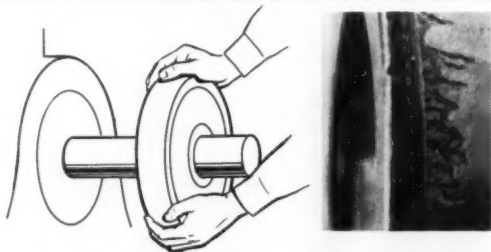




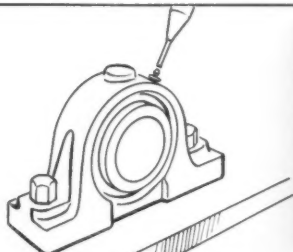
DISTRIBUTOR DAN, the SKF bearing man, lists THE 5 MAIN REASONS WHY BEARINGS FAIL and some helpful tips to eliminate them



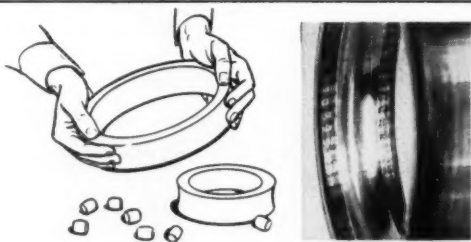
ABUSE DURING MOUNTING. Don't hammer the outer ring of a bearing having an interference fit on the inner ring. Striking the outer ring with a hammer almost always causes denting, brinelling, and even breakage—as shown in the photo at right.



IMPROPER MOUNTING can cause edge-loading and fatigue-flaking, especially in tapered and cylindrical roller bearings. Watch out for off-square mounting or cocking of the inner or outer ring, out-of-line housings or shaft deflection—all of which mean misalignment.



INADEQUATE LUBRICATION results in breakdown of the lubricant by carbonization into a fine abrasive. Heat generated softens the bearing steel and early failure results. So, be sure to give your bearings the right amount of lubricant in the right place at the right time.



DIRT AND OTHER PARTICLES will often cause denting, as shown at right. Even soft particles—brass, aluminum, wood and paper—can dent a rolling surface. Protect your bearings by using effective seals and maintaining cleanliness at all times.



CORROSION CAN START if you wash the bearing in cold solvent and then cover it with a cold slushing compound. The moisture can't evaporate so it expends itself in corroding the steel. To prevent this, immerse the bearing in hot oil or slushing compound and allow it to assume the temperature of the bath.

Baffled by a bearing problem? Whether it's selection, mounting, or maintenance—consult your Authorized SKF Distributor. He's staffed to help you keep them running smoothly and he stocks all the bearing types and sizes you need.

SKF
AUTHORIZED DISTRIBUTOR



6034

SKF MOTION ENGINEERING

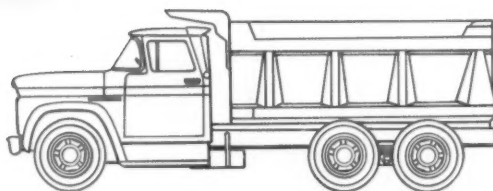
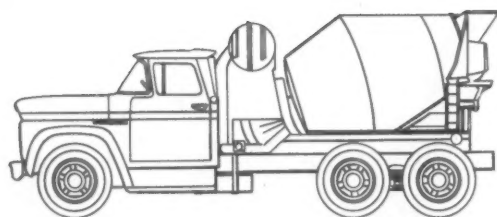
Advanced ball and roller bearing technology

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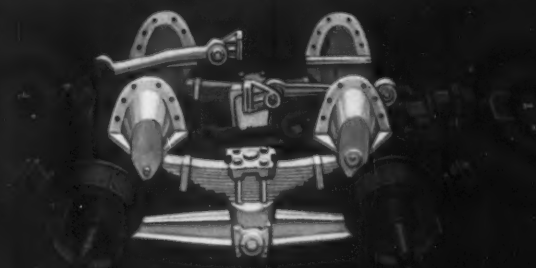
Circle 135 on Reader Service Card ►
CONSTRUCTION METHODS

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Typical examples of the construction uses of GMC Conventional 6-wheelers with 105" BSC.

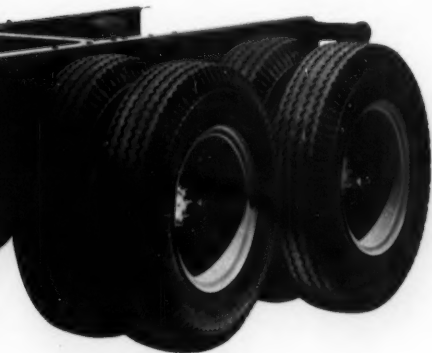


Lightweight, Low-Maintenance Tandems—With this GMC suspension you have less truck weight, carry bonus payloads. Equalizing beam guarantees equal load on each axle at all times. Rubber mounts and bushings at all wear points eliminate lubrication, minimize service. Short, lightweight springs only support the load . . . torque rods transmit all driving and braking forces.

**ONLY GMC EXCLUSIVE V-6 ENGINES
GIVE YOU ALL THESE
LIFE-EXTENDING,
PROFIT-PRODUCING
ADVANTAGES!**



Low-Price . . . High-Performance . . . Easy-Service . . . Easy-In-And-Out Construction Trucks!—Now when you want to haul bigger loads, get added traction and flotation on your construction job—it's yours at modest cost with the new GMC 105" BBC Conventional Six-Wheelers. Exclusive, extended-life V-6 engines are standard. Wide, full-opening hood and spacious compartment make servicing simple and easy. Cab floor is low to the ground to save time and effort when getting in and out. Seeing is believing. And your GMC Dealer listed in the Yellow Pages will gladly show you all. Contact him today.



NOW FROM GMC NEW, LOW-COST 6-WHEELERS!

QUICK FACTS—CONVENTIONAL 105" BBC SIX-WHEELERS

SERIES	W5000	W5500
GVW	35,000-37,000 lbs.	43,000-48,000 lbs.
GCW	50,000 lbs.	60,000 lbs.
AXLES—FRONT	7,000-9,000 lbs.	9,000-15,000 lbs.
REAR	28,000 lbs.	34,000 lbs.
BRAKES—HYDRAULIC	953 sq. in.	—
FULL AIR	943 sq. in.	1100 sq. in.
ENGINE—V-6 GAS	351 cu. in. 180 hp. 401 cu. in. 210 hp.	401 cu. in. 210 hp. —
TRANSMISSION	5-speed direct 3-speed aux.	5-speed direct 3-speed aux.

▲ = Optional

PULL HERE

- Heavy-duty GMC V-6 engines are designed to give you up to 200,000 miles of continuous operation without a major overhaul, with normal use and care.
- Usable power over an extended, low rpm range for higher performance and lower fuel costs.
- Compact block has staggered cylinders and 3-inch drop skirt for more strength and rigidity.
- Up to 176 gallons of coolant circulating every minute (over twice as much as many competitive engines) provide the flow necessary for life-prolonging heat transfer.
- Cooler-running, stronger, bigger sodium-filled valves with positive rotators give you extra-long life.
- Positive valve rotators (both intake and exhaust) give valves self-cleaning action to prevent sticking, pitting, warping, leaking and burning.
- Short, stiff Tocco-hardened V-6 crankshafts weigh twice as much as those in comparable V-8s . . . are stronger . . . have unsurpassed rigidity.

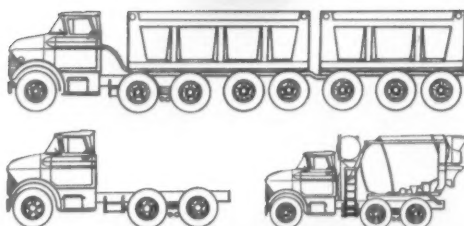


**Another
TRUCK
TRIUMPH
OF THE 60's!**

From ½-ton to 60-ton . . .
General Motors leads the way!
GMC Truck & Coach—a General Motors Division—
Pontiac, Michigan.



Big Span for Big Savings!—GMC's complete line of Conventional Ninety-Inch six-wheelers completely match your exact hauling requirements with full-range versatility in sizes, dimensions, power, gearing and strength. Whatever you need to cut job time and reduce operating costs, you can get from GMC. Giant-size DBW9000 with 90" BBC and 120,000 lbs. GCW shown above.



Just a few popular construction uses of the GMC 90" BBC Conventional 6-wheelers.

GMC 6-WHEELERS BATTLE RISING COSTS WITH B



Built To Outlast All Others!—Heavy-duty GMC cabs are built extra strong and stiff to last on tough construction hauls. You get double-panel structure; 3 big cross sills; 2 double-flanged side sills with outside channel and inner plate at cab mountings; 2 rugged braces at cab floor and back panel; heavy-duty construction everywhere.

Stronger, wider-track front axles and wide-spaced springs for greater stability and shorter turning.

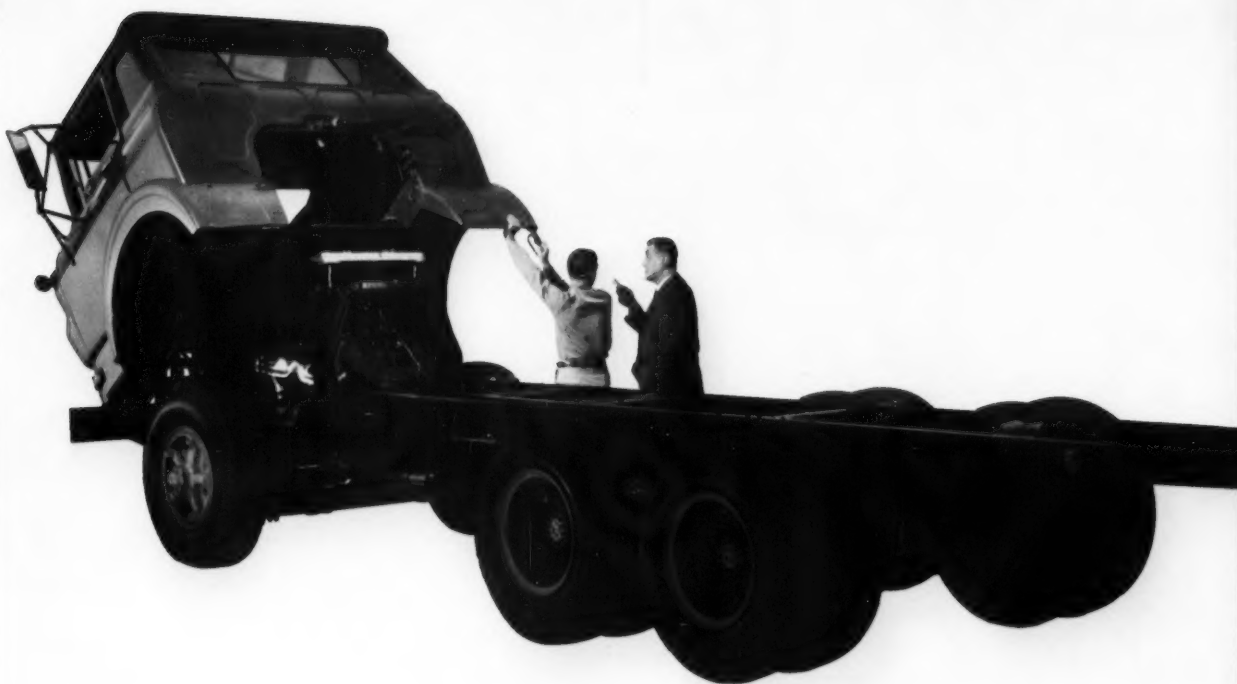


More Power Per Dollar, Per Cu. In., Per Pound!

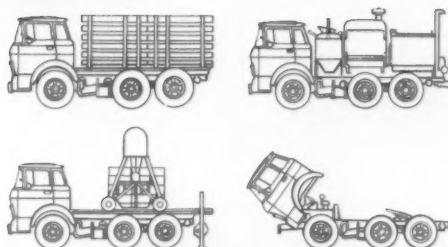
GMC V-6 Diesels—New GMC diesels are hundreds of pounds lighter, several inches shorter and less expensive to operate than other diesels in their class. Two-cycle design gives you power on every down stroke, twice as often as four-cycle design. Smoother, more responsive power permits you to get loads moving fast and keep them moving, day after day, and year after year.

Torque—577 to 604 lbs.-ft. Horsepower—189 to 218.

New-design frames can withstand the hard and grueling construction service.



Tilts at a Touch!—Tilting is an easy, one-man job with counter-balanced cab and trouble-free torsion bar spring. Engine is completely exposed. Stationary control island assures permanent positioning of controls for proper operation. Big-payload tilt-cab six-wheelers with 72" BBC and 52" set-back front axle cover the range—37,000 lbs. GVW to 76,800 lbs. GCW, LW7000 shown with exclusive Twin-Six.



Some construction applications for GMC's 72" tilt-cab 6-wheelers.

BIG, NEW ADVANCES ACROSS-THE-BOARD!

Most "80" You Can Get!

Exclusive GMC Twin-Six—Save job time, cut gear shifting up to 60% with the most powerful gas engine offered as standard equipment. This greatest load-moving power produced at low-stress, easy-stroking rpm also greatly extends engine life and cuts operating costs.

Profit-Performance On Every Haul

Model	Gross Torque Range	Max. Horsepower
702	625-630 @ 1400-2100	275 @ 2400

CHOOSE FROM THIS COMPLETE LINE OF GMC SIX-WHEELERS

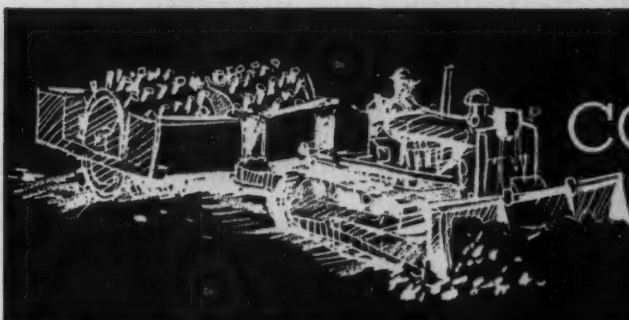
SERIES	GVW	GCW	ENGINE
105" BBC— W5000	35,000-37,000	50,000	V-6 180 hp.
W5500	43,000-48,000	60,000	V-6 210 hp.
90" BBC— BW5000	35,000-37,000	50,000	V-6 180 hp.
BW5500	43,000-48,000	60,000	V-6 210 hp.
BW7000	45,000-52,000	65,000-76,800	V-12 275 hp.
BW9000	59,000-64,000	90,000-120,000	V-12 275 hp.
DBW7000	45,000-52,000	65,000-76,800	*V-6 218 hp.
DBW9000	59,000-64,000	90,000-120,000	*V-6 218 hp.
72" BBC— LW5000	37,000	50,000	V-6 180 hp.
LW5500	45,000-48,000	60,000	V-6 210 hp.
LW7000	45,000-52,000	65,000-76,800	V-12 275 hp.
DLW7000	45,000-52,000	65,000-76,800	*V-6 218 hp.

*Diesel—Max. Power

Easy-shifting, high-torque-capacity transmissions for the most particular buyer and most unusual application.

Bigger brakes mean surer, safer stops. Longer life, too, with increased lining areas.





EARTH COMPACTION

HOW TO ACHIEVE BETTER RESULTS AT LESS COST

by M. D. MORRIS

Compaction Methods . . . continued

In any deep lift (12 to 24 in.) constant testing should be carried out to be sure that uniform densities are obtained through its entire depth, to avoid later settlement of the embankment.

Even in cases where uniform densities can be obtained throughout deep lifts, the contractor would do well to consider the relative economics of spreading and compacting shallow ones. The additional testing that deep lifts require is added expense. So, too, is the frequent necessity for push-tractors to help the earthmoving units move through the loose, deep lift to unload, even at low speeds.

Shallow lifts, say 3 to 5 in., have much to recommend them. Hauling units can dump at high speed without extra help, more volume of material can be placed per unit of time, better pulverization of fill material is achieved, and lighter compaction equipment can get complete penetration for more uniform density at greater speeds. But the costs of labor, fuel, and equipment ownership and maintenance must be studied on each individual job and for each different soil to determine the most economical height of lift.

Ballasting Machines

Load on a compaction machine can vary from the empty dead weight of the piece itself to a total ballasted load at some maximum capacity. Ballastable machines can be loaded with water, wet sand, or special metallic or

concrete weights. Each machine's operating manual should carry a chart of ballasting suggestions for making it work most efficiently in various materials.

If such a chart is not available, here are general suggestions, subject to check on the actual job:

Empty—Working in sands or silts.

Light Ballast—In light gravels and coarse sands.

Heavy Ballast—For wet clays and coarse gravels.

Full Ballast—In dry clays and for proof rolling.

One important word of caution: Do not overballast. This will only break down the material being compacted, and cause soil displacements, subgrade deflections, and pumping. Wheel loads that exceed the bearing capacity of the soil being worked on cannot compact or stabilize that material.

Compaction Speeds and Passes

Some engineers and contractors believe that the first pass of a compacting machine is the most effective, subsequent ones progressively less so, and the effect of any more than eight negligible. Others say each additional pass helps that much more. In the case of plastic material and the sheep-foot roller, it is automatic; under proper conditions the piece will "walk out" when the job is done. If good compaction isn't achieved in a reasonable time, continued coverage becomes uneconomical and a reason should be sought. It may be too much or too little

moisture, too high a lift, inadequate processing, or just plain wrong choice of equipment.

Rolling speeds are closely allied with the number of passes. Only field testing can determine the combination that gives the best results. Slower speeds consume more fuel and time, but they get a deeper effect in plastic materials. Faster speeds are recommended on yielding subbases and on sand in thin lifts. In some deep lifts, higher speed also may be helpful in keeping the loose material from flowing laterally.

The general method of dumping a complete loose lift, processing it, then compacting it is often referred to as the project method. For many cases, two other methods may be considered: the progressive method, and so-called stage compaction.

The progressive method is one where the lifts are really thin (up to 5 in.). A dozer and a grader follow the dumper, then the compactor packs the lift as the job moves along. When dumping has ceased, the first compaction pass will have been completed. Two or three more compacting passes by a light, fast machine, and the next lift can be applied.

Stage compaction is used when a complete loose high lift (over 12 in.) has been dumped, but will not support the weight of the large machine chosen to compact it. A light, unballasted machine must first go over the lift once or twice to form a working crust for the heavier equipment to run



PROGRESSIVE METHOD—On thin lifts, smaller machines get good results while working at high speeds. Above, vibratory rollers are drawn by rubber-tired tractor.

on. The heavier rigs, then, must make one or two passes before loading-up ballast completely to attain required density, which in cases like this is usually 100% of AASHTO.

Determining the best compaction method is not always simple. One prominent Southern road-builder says, "At the present it is not uncommon at all to find, on different sizeable contracts, that the contractor has spent from \$50,000 to \$150,000 in his efforts to find the equipment to produce the required compaction results. We personally have devoted considerable experimental effort to this and feel that we have been fairly successful in arriving at an economical method of gaining the high percentage of compaction required today.

"Our method has been to take the large 60-in. sheepfoot rollers

which were formerly crawler-tractor drawn and substitute a wearing or compaction surface on the feet to where it is increased from approximately 6 sq in. of bearing surface to 12 to 16 sq in. By substituting large, high-powered rubber-tired tractors for the track-type units, thereby increasing the speed from 3 mph to 10 and 12 mph, we have developed a medium combining the principles of the sheepfoot roller, the vibrating roller, and the impact roller.

"By varying the size of our bearing plates, and by varying the speed of our rubber-tired tractors (depending on the types of soil involved), we have been very well satisfied with our compaction results. As you can see, this method could be highly controversial with different manufacturers and, possibly, engineering research."

Weather

Because of the delicate balance of optimum moisture content, compaction seldom should be done in the rain. If sufficient water is available, hot and dry weather is no obstacle. Snow, like rain, should stop a job, and there is a limit to what can be done in extremely cold temperatures. Work on frost susceptible materials is uneconomical. That's because the effort required to compact granular soils properly at temperatures below freezing is several times that necessary to do the same job when the soil is thawed. Proper compaction of cohesive soils that freeze into clods is practically impossible.

However, in colder climates, many contractors on large jobs find it economical to stockpile fill material near the job sites during the winter months when they would not ordinarily be working. While the ground is frozen, they can make heavy hauls across lots, swamps, and streams, and make the trips shorter and direct. This way, too, they keep force and plant working during the slow months to free some haul rigs for other jobs during busy times.

Test Embankments

Within the limits of the specifications, a contractor can use the information given in this series of articles in the selection of some types of equipment and the elimination of others. The final choice of one or two from the narrowed range must be made in actual field test in combination with testing the other variables: moisture, proper soil mixture, height of lift, ballast load, speed and number of passes.

Earthwork specifications often require the contractor first to build some part of the final embankment as a "test embankment." Even when not specified, a test embankment often can save money in the long run.

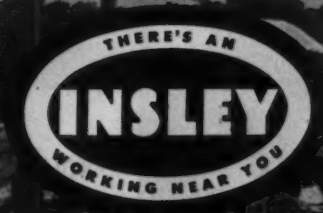
continued on page 142

An INSLEY gives the best SERVICE

The operator of this 20-Ton Insley "M" is spotting steel fast and with exacting accuracy—thanks to a positive, smooth-working combination of independent boom hoist and power load lowering. The independent boom hoist (power up and power down), operating through planetary gears, is the key to precision boom raising and lowering. With power load lowering, the load is lowered under power for full control all the way up and all the way down. These are just a few of the Insley "plus" features. Get the full story from your Insley dealer.

...gets the best service, too!

The Insley service network includes over 100 dealer locations throughout the U.S. and Canada. Each dealer has trained servicemen and is well stocked with genuine Insley parts . . . ready to handle virtually any service problem on an around-the-clock basis. Consider the importance of service and parts when you buy a new machine, and you'll buy an Insley every time.



INSLEY MANUFACTURING CORPORATION
P.O. Box 167 • Indianapolis 6, Indiana

EARTH COMPACTION . . .

Laboratory testing can establish specified densities and indicate corresponding optimum moisture ranges. The contractor can then indicate what materials will be used where, and what equipment he has available, as dictated by his proposed construction schedule. Then, by varying factors such as moisture content,



STAGE COMPACTION—An unballasted machine often makes the first pass on loose, high lifts to form crust for heavier rigs that will bring soil to specifications.



Here's LOW COST Loading-Screening

WITH NO SACRIFICE OF STRENGTH OR CAPACITY



Single-deck vibrating screen folds into towing position without dismounting screen or any of the drive assembly.



Rugged construction of Model 202 permits use of double-deck KOLMAN screen to make several sizes of material at once.



Sturdy design of Model 202 permits installation of loading trap on tail section, portable without disassembly.

Model 202, 40' x 24", 6' x 36"
Model 58-60 Screen, Model VH-4,
17 to 30 HP Wisconsin gasoline
air-cooled engine, attached Recip-
rocating Plate Feeder, Hopper and
roof type grizzly bars.

KOLMAN
MODEL 202
CONVEYOR

Rugged Box-Type Construction Permits Amazing Low Price

The Model 202 meets the demand for a conveyor in the low price field stout enough to carry a large single or double-deck vibrating screen and loading trap in a completely portable conveyor-screen plant.

"Box-Type" Construction

The rugged "box-type" construction of the Model 202 conveyor gives it unusual strength and rigidity. The sides are fabricated of 3/16" steel plate formed into a channel 16" deep with 2" legs. The steel belt cover reaches completely across the top, completing the box and completely encasing the return belt to prevent materials from working in to cause belt damage.

The under-slung power unit provides easy access for servicing and operation.

Folding Feature

The 202 is available with the Head Pulley Clutch feature which allows the belt to be stopped and started while the vibrating screen remains in operation.

The KOLMAN Model 202 is rugged enough to carry a loading trap and large vibrating screen without additional support. It will take the kind of punishment that is dished out in a portable outfit—and will cost you far less money to own and operate. Available in 18" or 24" belt width, in lengths up to 50'.

For Further Information Write or Wire

KOLMAN MANUFACTURING COMPANY

5900 West Twelfth St., Sioux Falls, S. D.

or see your nearest Kolman dealer

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thickness of layer, placement methods, compaction equipment, and compactive effort, the best combination to achieve these desirable densities and conditions may be determined by field testing. Of course, the contractor's costs of equipment operation and manpower per unit volume of embankment are a necessary consideration.

This obviously leads to more efficient inspection by the engineer. He should know what moistures and field operations will produce desired results without excessive and delaying field testing. It also provides the contractor with knowledge of what is his most efficient operation, and allows for his scheduling of equipment with minimum delay. For instance, there is no need to require eight full passes with a sheepsfoot roller when four will do. Nor is there need to shut down a grading operation while the engineer tests the entire embankment layer, only to order more rolling.

Proof Rolling

Subgrades often are tested by giving them a few passes of a large-tired heavy proof roller after completion of normal compaction. When properly specified and when the soil's moisture is in the optimum range, such rolling will correct compaction deficiencies. When the soil is too wet, proof rolling will indicate it so the condition can be corrected.

continued on page 145

LE ROI LRD-3

for powerful,
deephole rotary drilling

Here's the *big rig* . . . completely self-contained for putting down hole as large as 7 $\frac{3}{8}$ in. to 100 ft. depth!

The LRD-3 is available with either crawler or truck mounting. An enclosed cab can be furnished to provide all-weather protection for the operator while drilling. All controls are conveniently grouped for easy operation and good visibility.

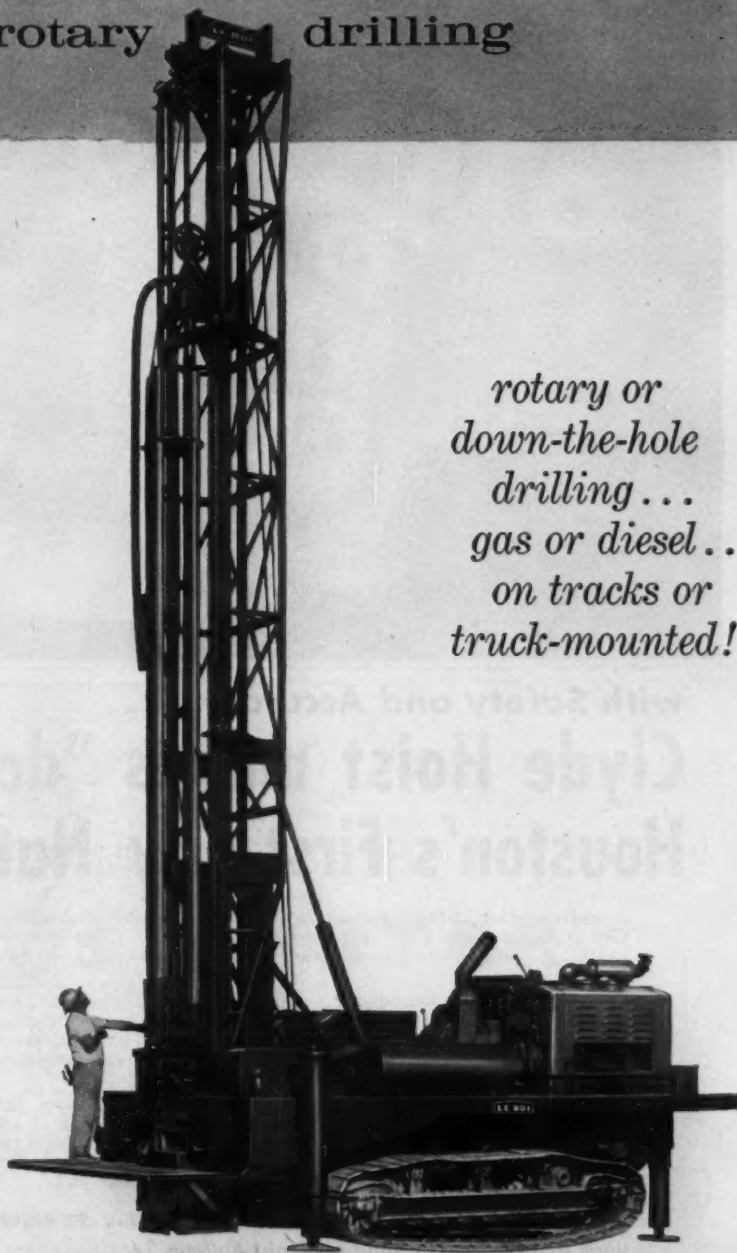
The traveling head design of the LRD-3 provides positive mechanical power without excessive torque loss under heavy pulldown, and permits easy control in making up and breaking down drill pipe. Every function of the unit is designed to speed productive drilling and keep the operator making hole. Leveling, raising the mast, and even the automatic drill pipe magazine are hydraulically controlled for speedy operation. A powerful dust collector traps cuttings and blows them well away from the unit.

An extra-sturdy 4-speed chain-hydraulic pulldown puts up to 30,000 lbs. of pressure on the bit of the LRD-3. A rugged dual-range transmission provides rotary speeds from 9 to 168 rpm in a selection of 10 forward and 2 reverse speeds.

Where needed, the rotary bit can be quickly changed for a powerful down-the-hole drill. A Le Roi 100 hp dual-manifold air compressor provides plenty of 100 psi air for punching through tough rock with the down-the-hole drill, or it can be set to deliver 625 cfm of 40 psi air for fast, efficient removal of cuttings in rotary operation.

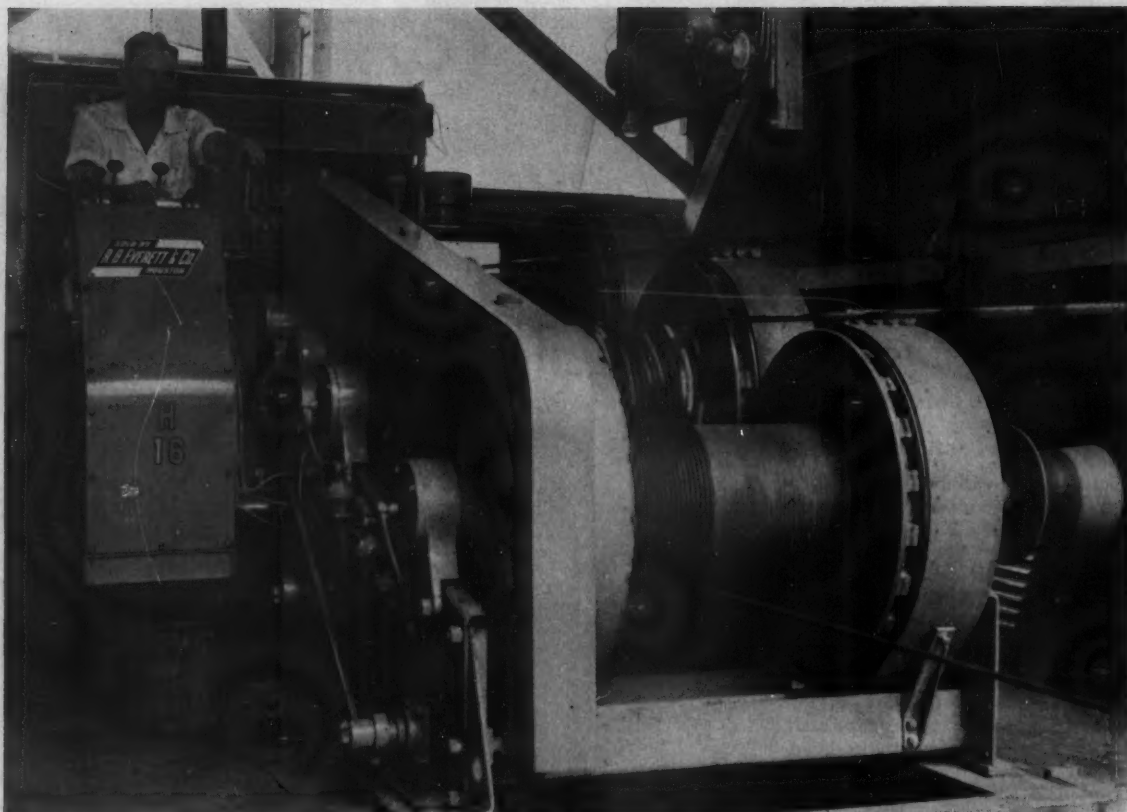
The LRD-3 comes complete with a hydraulically operated magazine with capacity for four 20 ft. drill pipes, and can be equipped with such optional equipment as lights for night-time operation, a mounted bit grinder, air hoist, breakout tongs, water injection system, etc. Specification Sheet AT-147 describes the unit in detail, with complete spec information. Send for a copy.

*rotary or
down-the-hole
drilling . . .
gas or diesel . . .
on tracks or
truck-mounted!*



LE ROI

division of Westinghouse Air Brake Co. Sidney, Ohio
Circle 143 on Reader Service Card



with Safety and Accuracy . . .

Clyde Hoist makes "deposits" at Houston's First City National Bank

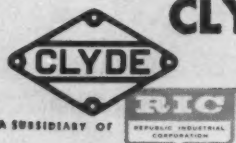
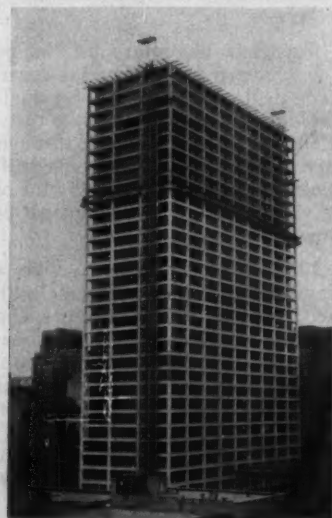
A major portion of the construction materials 'deposited' in the First City National Bank were speedily spotted with this Clyde Frame-6 Hoist . . . hoists noted around the world for dependable, efficient service.

Clyde's reputation is born of many 'plus' features that permit operator to hoist and spot loads with ease and accuracy. Large diameter, extra-capacity brakes handle maximum loads by light toe action. Clyde's internal expanding, band friction clutches give smoother, more positive full-load service.

Comparison of construction features shows why Clyde Hoists have had a reputation for superiority for more than half a century! All steel bed and side frames, high strength spur gears, anti-friction bearings throughout are but a few of the many extra values built into all Clyde Hoists . . . from 3,000 to 80,000 pounds line pull.

There is a Clyde Hoist to fit your requirements . . . to exceed your expectations! Send for Hoist Bulletin 34.

The 32 story First City National Bank adds an impressive landmark to the Houston skyline. Contractor: W. S. Bellows Construction Corp.



CLYDE IRON WORKS, Inc.

Established 1899
DULUTH 1, MINNESOTA

HOISTS : DERRICKS : WHIRLEYS : BUILDERS TOWERS
UNLOADERS : CAR PULLERS : ROLLERS

Circle 144 on Reader Service Card

CONSTRUCTION METHODS

EARTH COMPACTION . . .

If the material is too dry, however, there is danger that the roller will give a false indication of firmness. Then, as moisture increases later, the fill will weaken.

Contractors who do not have large-tired rollers need not give up the idea of proof-rolling, since it is the unit pressure and not the total load that counts. Small-tired rollers may be utilized if ballast is properly calculated. They have the added advantage of finding smaller wet spots often bridged by the larger machines.

Conclusion

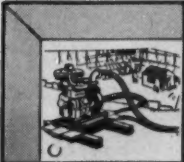

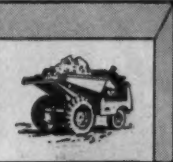
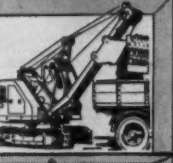

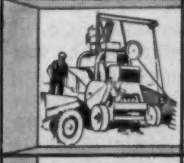
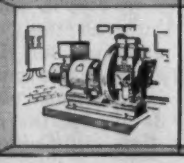
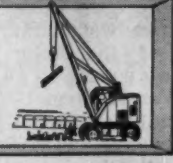
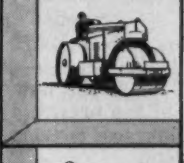

Compaction is a subject so vast, and complex, and which depends upon so many variables, that one would be a fool to pretend to offer a solution to all its problems. This series of articles will be successful if it helps the contractor to understand some of



PROOF ROLLING—After normal compaction of subgrades is completed, a few passes with a large-tired roller will help correct deficiencies, check on moisture.

these dependent functions and how to attempt to cope with many of the problems that occur in the course of normal job operations. The utmost gratitude is expressed to the great number of experienced men in all corners of the

field who cheerfully gave of their time and knowledge in order that this series could be produced accurately and informatively. They, like I, want to promote one objective; better earth compaction results at less cost.

		
<h1>POWER</h1> <p><i>for every purpose</i></p>		
		
		
	<p>ELIMINATE WINTER WORRIES! Built-in cold starting for sub-zero temperatures; totally enclosed working parts. No "freeze-ups". Power take-off, full rpm, flywheel end or half speed gear end. <i>Write for data and prices.</i></p>	
		

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**Air-Cooled: 1½-72 HP,
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Canadian Lister-Blackstone, Ltd., 1921 Eglinton Ave. E., Toronto 13, Ont.

Construction Men in the News

Golden Beaver Awards Go to Connolly and Root



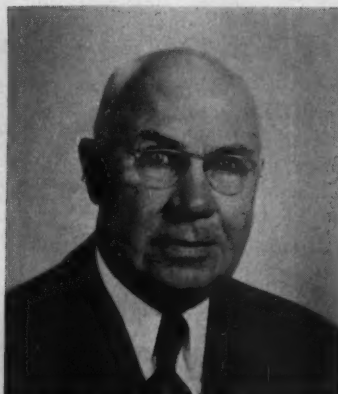
T. E. CONNOLLY



DAVID E. ROOT



GEORGE T. MCCOY



JOHN L. SAVAGE

FOUR VETERANS of the heavy construction industry received Golden Beaver Awards at the sixth annual meeting of the Beavers in Los Angeles. The organization of western construction men honored:

For Management

T. E. CONNOLLY, founder of T. E. Connolly, Inc., of San Francisco.

Connolly, who says he is semi-retired, launched his firm in 1925. Since then the company has participated in the construction of major dams, tunnels, and marine projects. Notable achievements include a tunnel with the largest cross-section in the world through Yerba Buena Island in San Francisco Bay; a hydraulic-fill dam that required 11 million yd of excavation and embankment and

750,000 yd of concrete, and rock jetties along a large portion of the California coastline. About 7.5-million tons of stone from Connolly-owned quarries went into the construction of the Long Beach offshore breakwater.

During World War II, Connolly's crews built military facilities in Alaska, Hawaii, and on several South Pacific islands.

For Supervision

DAVID E. ROOT, retired vice president of Guy F. Atkinson Co.

Root joined the construction industry when he became a rivet carrier in Philadelphia in 1900 at the age of 13. Later, Root worked for Scofield Construction Co. and Clinton Construction Co. on a wide variety of projects in San Francisco and Hawaii. He also directed the construction of

the Posey Tube at Oakland for California Bridge & Tunnel Co.

Root joined Atkinson in 1934 and remained there for the next 25 yr. He participated in the construction of the Bonneville dam locks and powerhouse, Treasure Island's exposition building, Hansen and Mud Mountain dams, the Roosevelt naval base, and numerous other piers, pipelines, and bridges from the San Fernando Valley to San Diego. He was in charge of all Atkinson activities in Southern California until his retirement in 1959 at the age of 71.

Other Awards

For Engineering: GEORGE T. MCCOY, retired, California State Highway Department. He served as chief of the highway division for 16 yr until his retirement in 1959.

Special Honor: JOHN L. SAVAGE of Denver, retired consulting engineer. He specialized in the design of dams and power plant all over the world for nearly 40 yr.

Foundation

RICHARD M. JOHNSON is the new president and director of The Foundation Co. of New York City, specialists in constructing bridge piers and building foundations. He succeeds the late Chester W. Cambell.

Johnson joined the firm in 1923. Previously he was a vice president and in charge of a project built for the Ohio Edison Co. at Stratton, Ohio. Before that he was a key man for the company during the construction of the foundation for the Chase Manhattan Bank building in lower Manhattan.

Blakeslee

ROBERT B. CURTIS is the new general manager of the prestress plant of C. W. Blakeslee & Sons of New Haven, Conn.

Before joining Blakeslee in 1958, Curtis worked for the Worthing Construction Co. of Line-Lexington, Pa., as a construction engineer on the Pennsylvania Turnpike.



Autocar

"World's Finest"

PASTOR TRUCKING COMPANY, Baltimore, has just bought six more Autocars as a result of Autocar experience on the new Baltimore-to-Harrisburg Expressway. "Autocar—nothing less," says Mr. Impaciore, president.

This job is Autocar size... don't think of less

For certain jobs you either have Autocars or wish you had. Nothing less answers.

Take building an expressway like Maryland's new Jones-Falls. There's a job that really tests a truck's character. Loads are terrific. Grades

are steep and there's constant shifting. The mud can even be axle deep, but to the Autocar this is still a non-stop operation. Such performance is the direct result of the custom engineering and quality in which Autocar is unsurpassed.

When you have Autocar-size jobs, there's no substitute for the "World's Finest." It's profitable to have Autocars on road construction projects. Why be sorry you don't? WHITE-Autocar comprehensive service throughout the United States.

Autocar

"World's Finest"

Division of
The White Motor Company
Exton, Pa.

Circle 147 on Reader Service Card

SPECIFY... DRILLING EQUIPMENT WITH BUILT-IN QUALITY-DEPENDABILITY



YOU'LL END UP WITH THE PROFITS YOU'VE LOOKED FOR

Yes, you can buy ordinary drilling equipment and you'll probably save money... but in a short time the efficiency of the machine will drop, the rods will be worn and bent, the waterswivels will leak, the casing will be broken, the dependability you counted on will not be there. Instead, you'll be required to spend large amounts of money bringing comparatively new equipment back up to par.

If you are looking for drilling machinery and equipment that is built for Quality... not for Price, specify and purchase **SPRAGUE & HENWOOD**: dependable... efficient... proven in the field.

Write, giving full particulars on your problem, and the correct brochure or catalog will be sent to you immediately.

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Circle 148 on Reader Service Card

Sales and Service

Equipment purchasing and servicing takes less time when you know who and where to call. Keep advised of new distribution, sales personnel and other activities.

Distributor Appointments

Koehring Co.: The Parsons Div. has appointed J. R. Panelli Equipment Co. of Southfield, Mich., as distributor for eastern Michigan. The Buffalo-Springfield Div. has named Hodge & Hammond, Inc., of New York City as distributor for southeastern New York; Evans Engine & Equipment Co. of Seattle as distributor for Alaska and eastern Washington; and Shelley Tractor & Equipment Co. of Miami as distributor for southern Florida. The C. S. Johnson Div. has designated Equipment & Supplies, Inc., of Pittsburgh as distributor for eastern Pennsylvania. The Koehring California Div. has named G-K Machinery Co. of Boise as distributor for Idaho, and Cooper Equipment Co. of San Antonio as distributor for southern Texas.

Bucyrus-Erie Co.: Lake Shore, Inc., is now the distributor for shovels, cranes, and related excavation equipment in northeastern Minnesota.

Harnischfeger Corp.: A. E. Hickman Co. of St. John's is distributor for P&H products in Newfoundland. Contractors Equipment Co. of Louisiana has been appointed distributor in northern Louisiana.

Bath Iron Works Corp.: The Pennsylvania Crusher Div. has named Ottus Construction Equipment, Inc., of Erie as distributor for nine counties in western Pennsylvania.

Huber-Warco Co.: O. B. Avery, Inc., of St. Louis has been named distributor in southern Illinois and eastern Missouri.

Racine Hydraulics & Machinery, Inc.: Sturgis Valve & Fitting Corp. of St. Louis is distributor for hydraulic equipment in Missouri, Nebraska, Kansas, and the southwestern portions of Illinois and Iowa.

continued on page 151

CONSTRUCTION METHODS

How To Effectively Key Your Bidding And Buying!

Making a successful bid and coming up with an adequate profit is a rare art in these times, but *it can be done* if machine capabilities and job requirements can be closely and accurately matched . . . TROJAN gives you the opportunity to make the most of your own experience and judgment in matching job and machine for maximum profit . . . With 7 machines available in lifting capacities of 7,000 to 24,000 lbs., with bucket options, power options and attachment options; you can key bucket capacity to required power with almost pin-point accuracy . . . There's no need to compromise — no need to buy more or less work capacity than you actually need . . . And, in addition, with every TROJAN you get the tested and proven features of design and construction that permit your operator to tackle the toughest jobs hour after hour, day after day — and complete them safely, swiftly and profitably . . . Most TROJANS sell themselves to hard-boiled buyers at competitive demonstrations against any machine on the market because they are built right, priced right and are 'honeys' to handle . . . Want more details or a field demonstration? Just call your nearest Trojan distributor.



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MODEL 404
LIFTING CAPACITY 24,000 LBS.



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MODEL 134
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THE YALE & TOWNE MANUFACTURING COMPANY
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Circle 149 on Reader Service Card



Pavers set new daily record in Michigan

Denton Construction Co. personnel on the job. Left to right, L. M. Denton, president; Mickey Palmer, job superintendent; Charles Leduman, general superintendent; and Richard Mitte, paving foreman.



These four paving machines set a new national record of 8,036 ft laid in a single day. Bethlehem road steel products were used in the record stretch.

1½ miles of 2-lane highway placed with Bethlehem paving steels

A new national record for concrete road pavement laid in one day was set on August 25, 1960, by Denton Construction Co., Grosse Pointe Woods, Michigan.

Working on US 27 north of Indian River, the company placed 8,036 ft of 24-ft wide, 9-in. deep concrete in a 12-hour day. Four paving machines were used to lay the 1.52 miles of two-lane highway.

The paving steels used by Denton—dowel units, hook bolts, base plates, mesh, and reinforcing bars—were all supplied by Bethlehem Steel.



For strength
... economy
... versatility

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.
Export Sales: Bethlehem Steel Export Corporation

BETHLEHEM STEEL



CONSTRUCTION METHODS

FOR QUICK AND POSITIVE FORM ALIGNMENT

New! **SUPERIOR** **Adjusta-Brace**

Permits maximum
adjustment in **ANY**
direction at
ANY angle.

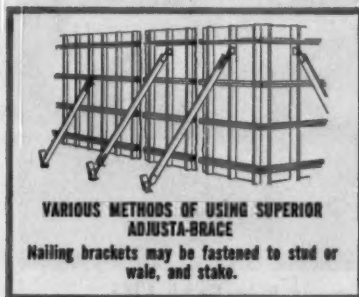


Providing a swivel action for quick positioning and adjustment, the Superior Adjusta-Brace consists of two units, connected by a 2 x 4, 2 x 6 or a 1" i.d. pipe. Either unit may be attached to the wall form, or to the stake, but it is usually more convenient to use the Adjusting Unit at the stake.

The Adjusting Unit has a patented double-wing nut, working on a 1" diameter rod, with an adjustment of 12". The design of this bracket and the method of attachment are such that it works as a universal joint to take any required position. The companion non-adjusting unit is also designed to take any position that field conditions may impose.

The Superior Adjusta-Brace is light in weight, durable, and inexpensive. Contractors report substantial savings in time and labor compared to the conventional method of bracing.

Write for prices & Bulletin AB-1.



SUPERIOR
CONCRETE ACCESSORIES, INC.
9301 King St., Franklin Park, Ill.

New York Office

39-01 Main St., Flushing 54, N. Y.

Houston Office

4101 San Jacinto, Houston 4, Tex.

West Coast Plant

2100 Williams St., San Leandro, Calif.

Circle 201 on Reader Service Card

FEBRUARY, 1961

SALES AND SERVICE . . .

continued from page 148

On the Sales Front

Poor & Co., Inc., The Pioneer Engineering Div. has appointed C. G. Sears general sales manager.

The Lincoln Electric Co.: C. O. Planting has been named district manager for the Detroit sales territory.

Link-Belt Speeder Corp.: R. A. Smith has been appointed sales manager.

The Upson-Walton Co.: Frank J. Brown has been designated sales representative for Kansas, Missouri, and Nebraska.

Hewitt-Robins Inc.: Arley J. Ball has been named eastern regional sales manager with headquarters in New York City. C. L. Frost has been named manager of distributor sales by the company.

Worthington Corp.: William H. Wheeler has been named general sales manager of the Construction Equipment Div. at Holyoke, Mass.

General Motors Corp.: The Euclid Div. has named John Sharda manager of the new direct factory branch in Chicago that will serve northern Illinois.

Diamond T Motor Truck Co.: Harold F. Cook has been promoted to assistant sales manager of the company.

Special Mention

Marquette Cement Mfg. Co.: Marquette shareowners have approved a plan to acquire North American Cement Corp. North American's plants are located at Catskill, N. Y., Howes Cave, N. Y., and Security, Md.

American-Marietta Co.: The Master Builders Div. has formed a joint venture with the Nippon Soda Co., Ltd., of Japan to form the Nisso Master Builders Kabushiki Kaisha. Headquartered in Tokyo, the new firm will manufacture and market the full line of Master Builders products throughout the Far East.

The McKay Co.: Automatic Welding Co. of Waukesha, Wis., has been acquired by The McKay Co. and will be operated as a wholly owned subsidiary.

NOW MIX IT FASTER



Exclusive paddle design of Muller Mixers gives better, faster mixing action . . . insures a uniform mix every time! Lifetime guaranteed Double Shaft Seal keeps dirt and grit out of bearings, prevents breakdowns and lost time. Oversize power, quality construction, plus many other rugged features add up to the fact that Muller Mixers are the best value in the industry.

Write today for complete details and information on the full line of Muller products, designed to help you build better, faster, and at lower cost.



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Circle 151 on Reader Service Card

Construction Equipment News

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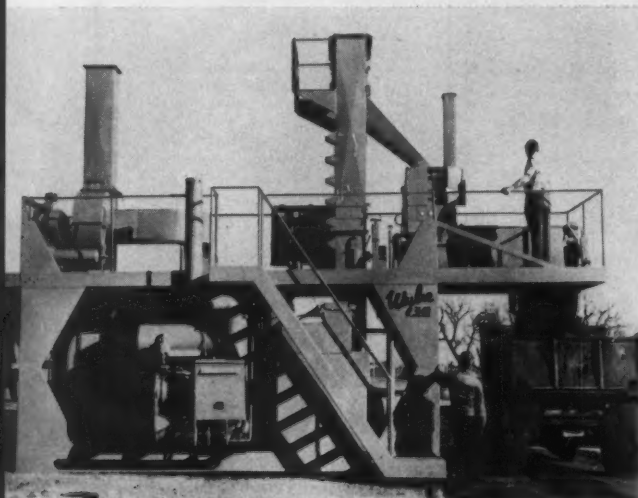


Mobile Ready-Mix Plant Hydraulically Erects Itself

It takes just 3 hr to erect the Heltzel Series 600 mobile ready-mix plant at the job site. On the highway it travels in two parts, each towed by a separate tractor. One section is a 21-ton cement unit, and the other is a four-ton capacity aggregate plant. The cement unit elevates itself into position hydraulically in 3 min. When equipped with 18-in.-wide conveyor belts between the storage unit and the batching bin, the plant can produce from 120 to

130-yd per hr. Capacity can be boosted to 180-yd per hr when 24-in. belts are used. The Series 600 plant is equipped with split 7½-yd batchers and is available with either two or three aggregate storage compartments with a total capacity of 54 tons. Adding 2½-ft side extensions increases maximum capacity to 75 tons.—Heltzel Steel Form and Iron Co., Warren, Ohio.

Circle 301 on Reader Service Card



Asphalt Plant Turns Out 50 Tons Per Hr

All components of the Model 3140 Roadmaster asphalt plant are mounted on a single frame. The plant includes a rotary dryer, pugmill, batching hopper, material hopper, elevator, dust collector, and asphalt metering system. The plant is 34 ft long, 8 ft wide and weighs about 14 tons. It produces up to 40 tons of cold-mix per hour. Either a 50-hp electric motor or a gasoline or diesel engine is available.—Wylie Mfg. Co, 640 N. Meridian, Oklahoma City, Okla.

Circle 302 on Reader Service Card



Loader Attachment Fits Fork Lift

At its 8½-ft-dumping height, the 1¼-yd front-end loader attachment for the Hi-Lifter has a bucket rollback of 50 deg. At ground level maximum rollback is 40 deg. The hydraulically controlled attachment has a digging width of 94 in. The Hi-Lifter has a breakout force of 9,000 lb and it can lift 8,500 lb. The unit operates easily because the front operating mechanism pivots ahead of the operator.—Kwik-Mix Co., Div. of Koehring, Port Washington, Wis.

Circle 303 on Reader Service Card

Scrapers Feature New Transmissions

Four-wheel 630 Series A and two-wheel 631 Series A (photo) tractor-scrapers are equipped with new Caterpillar torque divider power-shift transmissions that combine planetary gear groups with torque converters. The transmissions provide three automatically selected drives—torque divider, direct, and overdrive. The operator selects one of three speed positions, and one of the three drives within the range is engaged automatically to meet changing power requirements. Both of the new units are powered by 420-hp diesel engines. Top speeds are 31 mph for the 631A and 41 mph for the 630A. The scrapers have air-actuated, double-drum cable controls. Capacities for both are 21 yd struck and 28 yd heaped.—Caterpillar Tractor Co., Peoria, Ill.

Circle 304 on Reader Service Card



Crawler-Mounted Backhoe Operates Hydraulically

The Hy-Ho hydraulic backhoe is now available on crawler undercarriage with a 10-ft track length and 24-in.-wide pads. Overall width is 8 ft. Double hydraulic motors on each track control crawler motion. Individual pumps supply independent power to each track. The Model 480 backhoe features a ½-yd bucket, 15-ft digging depth, and a 23-ft reach. The boom, bucket, and dipper stick are actuated by double-string hydraulic cylinders. The backhoe can climb 30% grades and travel at a top speed of 1.5 mph. Optional attachments for the Model 480 include a frost breaker, ripper, ditch cleaning bucket, and Hy-jib crane. Hydraulic Machinery Co., Milwaukee, Wis.

Circle 306 on Reader Service Card

Electric Wheels Drive Big Tractors

Three wheel-mounted prime movers make up a new line of R. G. LeTourneau diesel-electric tractors for pushing and dozing. Smallest unit of the Pacemaker line is the Series K-53F Tug Dozer (photo). It rides on three wheels and weighs about 40 tons. Both the Series K-54 and the Series K-104 Power Dozers are mounted on four wheels. The K-104 is powered by a pair of 420-hp diesels, and the K-54 and the K-53F have single 420-hp diesels. All-wheel drive is standard on all models. Each wheel has its own dc electric motor and reduction gear built into the rim. Generators connected to the engines supply the power.—R. G. LeTourneau, Inc., Longview, Tex.

Circle 305 on Reader Service Card





**"WE USE
LUBRIPLATE
LUBRICANTS IN
TEMPERATURES
DOWN TO -60°F"**

says UNITED KENO HILL MINES LTD.
of Whitehorse Y. T. (Canada)

To further quote Mr. W. C. Whitehouse, the mechanical superintendent of their Transport Division, "We are using LUBRIPLATE Lubricants in engines, transmissions, final drives and wheel bearings of all our machines. Six LUBRIPLATE products satisfactorily lubricate all our equipment both Winter and Summer."

W. C. Whitehouse, Mechanical Superintendent

**REGARDLESS OF THE SIZE AND
TYPE OF YOUR MACHINERY,
LUBRIPLATE GREASE AND
FLUID TYPE LUBRICANTS WILL
IMPROVE ITS OPERATION AND
REDUCE MAINTENANCE COSTS.**

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



Circle 154 on Reader Service Card

EQUIPMENT NEWS . . .

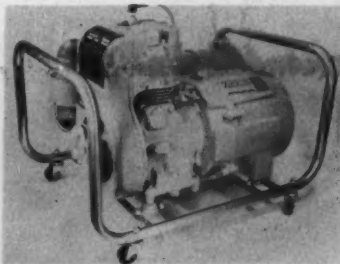
For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.



Work Platform

To do overhead work, a man simply steps on this work platform, presses a button, and rises automatically to a maximum height of 20 ft. The Atlas welded steel step-on scaffold is electrically powered. It is mounted on casters and can be rolled easily by one man.—Atlas Industrial Corp., 849 39th St., Brooklyn, N.Y.

Circle 307 on Reader Service Card

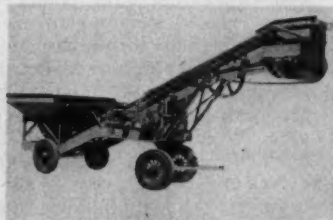


Electric Generator Eliminates Commutator

The generator on this portable electric plant contains a permanent magnet alternator that eliminates commutator, brushes, and slip rings. The permanent magnet is fan-cooled and directly connected to the engine shaft. The 60-cycle, single-phase Zeus Model GW-300 is rated at 3,000 w, 115/230 v. It is equipped with three power outlets. A rope-started, one-cylinder, four-cycle,

air-cooled gasoline engine powers the generator. The plant will operate for about 5 hr on one 2 3/4-gal tank of fuel.—Borg-Warner Corp., Pesco Products Div., 24700 N. Miles Blvd., Bedford, Ohio.

Circle 308 on Reader Service Card



Portable Mixing Plant

The Thoro-Mix portable base mixing plant includes a pugmill, conveyor, bins, and piping and meter equipment, all mounted on wheels. The unit produces up to 500 tons per hr. The pugmill, either twin or single shaft, is mounted at the end of a 24-in. conveyor.—Universal Engineering Corp., Cedar Rapids, Iowa.

Circle 309 on Reader Service Card

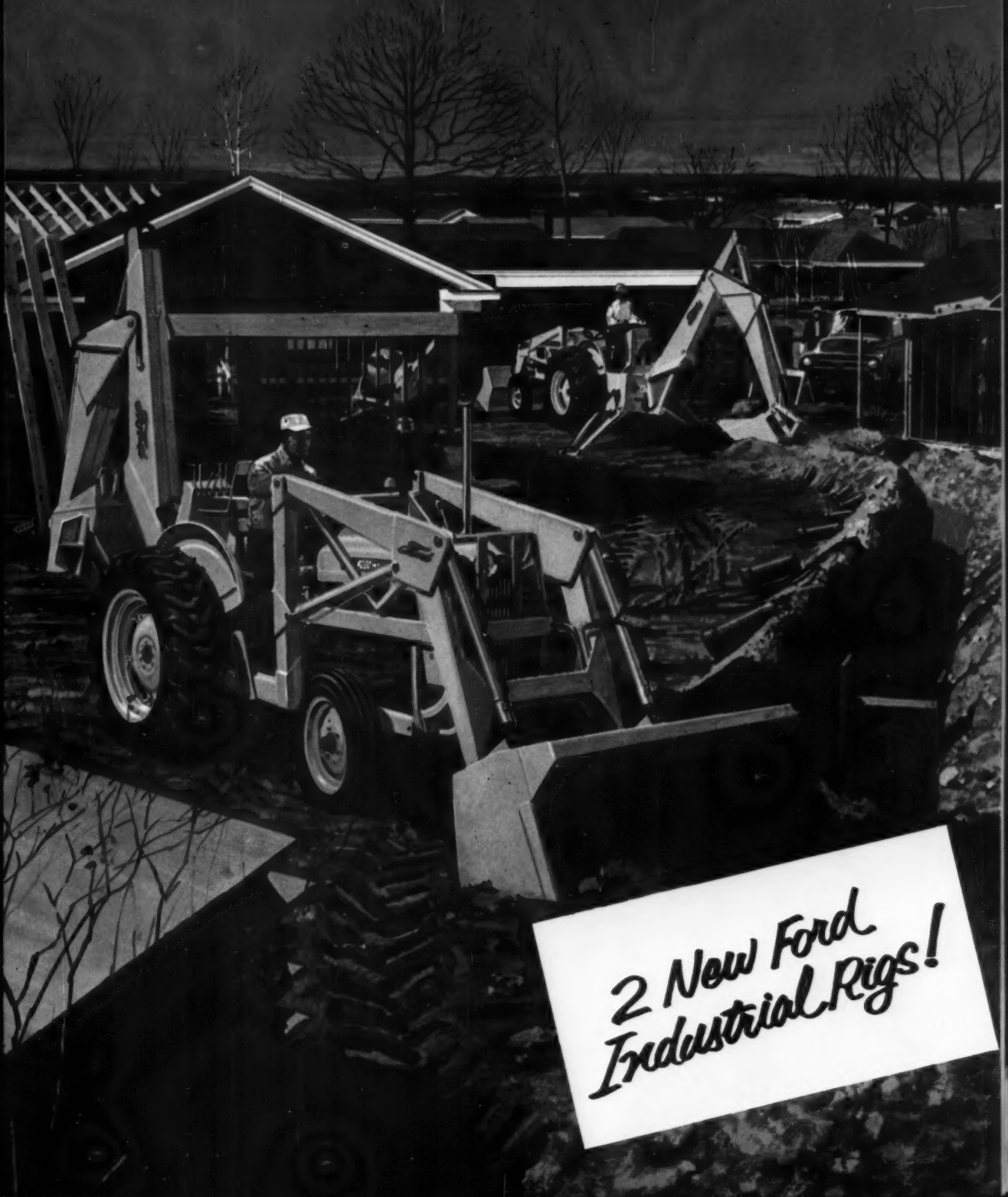


Hydraulic Tower Hoist Reaches 170 Ft

Adding extra 5-ft and 10-ft sections to the basic Jumbo hydraulic hoist permits heights to 170 ft. The rig hydraulically erects itself in 1 min to its 30-ft basic height. A 3,000-lb load can be raised on the hoist's 5 1/2 x 6 1/2-ft platform that stops automatically at any preset level. Among the hoist's safety features are a device that locks the platform to the tower in case of cable failure and an automatic brake which takes over in case of a power failure or pressure loss.—Tubular Structures Corp. of America, 4560 Sperry St., Los Angeles 39, Cal.

Circle 310 on Reader Service Card

No Loafers, No Part-Time Workers On This Job...



*2 New Ford
Industrial Riggers!*



New FORD 2000 Industrial tractor has 48.4 engine horsepower (gasoline), heavy front end, power steering, foot throttle—easily handles this 10' Ford backhoe and new Ford 720 Loader. Try this unit for low first cost, low fuel bills, fast maneuvering in tight spots.

New FORD 4000 Industrial tractor has all the high production features of the 2000 but with 62.5 horsepower plus added weight and strength. High powered and rugged, the 4000 makes tough jobs easy with this new Ford 720 Loader and a 12' backhoe.



These Bright NEW Ford Rigs are ALL-DAY, ALL-JOB WORKERS

The paint is new but that's not all... here are a couple of lean and brawny middleweights with new productivity, versatility, dependability. These new Ford rigs don't sit around on their big fat tires half the day... they dig, load, backfill, grade—handle a dozen jobs from either end. A 2000 or 4000 is small enough to get in tight places, strong enough to do the job. They're *sized right* between light and heavy equipment... *priced right* down among the lowest of their kind... *built right* to do more good jobs for you...

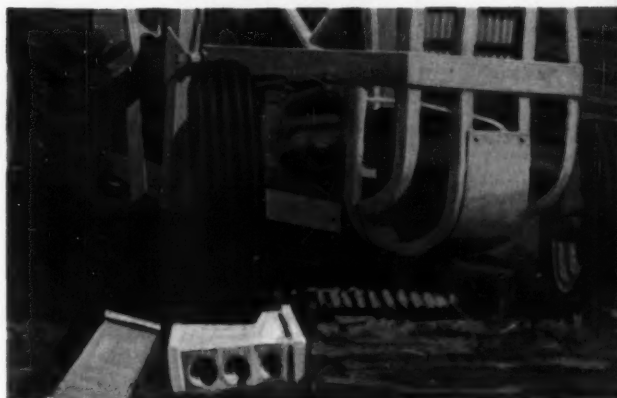
NEW High-Lifting Half-Yarder—Half-yard struck capacity bucket, 2000 lb. lift, 4000 lbs. break-out capacity. High-speed, cool-operating hydraulics and Ford's fast tractors permit fast, sustained loading... responsive 4-position controls and a handy bucket level indicator provide accurate digging, grading, loading.

Far Reaching Backhoes—Pick the size you need—10' or 12' for either unit... each Ford backhoe attaches quickly, has big buckets, precise controls, wide stance stability and fast, strong hydraulics... the 10' size digs 10'8" deep, and reaches out 17'4" from the axle... the 12' size digs 12'5" deep and reaches 19' from the axle... Ford backhoes are unmatched for length of trench dug from one setting!

Ford Pays Half your diesel fuel bills—buy a diesel-engined Ford 2000 or 4000 and Ford pays half your fuel bills for the first six months or the first 400 hours—whichever occurs first. Fords are famous as fuel misers and now you can cut operating costs even more. Offer good to March 31, 1961 on any new Ford or Fordson diesel. See your Ford dealer for details.



Downshift on-the-go with Select-O-Speed to bull in, bring out a heaped payload...



One-piece rugged cast steel I-beam front axle moves heavy loads over curbs, across ruts.



High lift—long reach of loader dumps into the center of your standard truck.

FOR 101
INDUSTRIAL JOBS

FORD

COPYRIGHT 1960 FORD MOTOR COMPANY

BUSINESS REPLY MAIL

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

FIRST CLASS
PERMIT NO. 119
BIRMINGHAM,
MICHIGAN

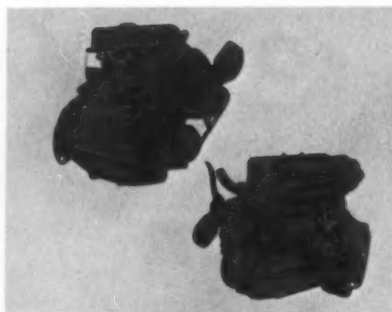
Ford Motor Company,

2500 E. MAPLE ROAD
BIRMINGHAM, MICHIGAN

ATTN: Industrial Sales

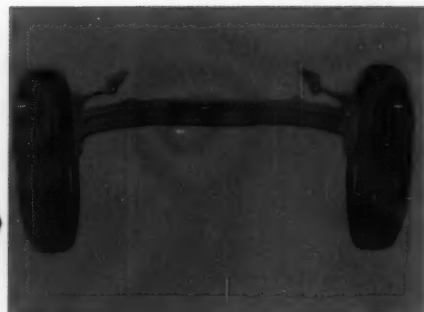
FORD WORKS FULL-TIME FOR YOU

...and here's why:

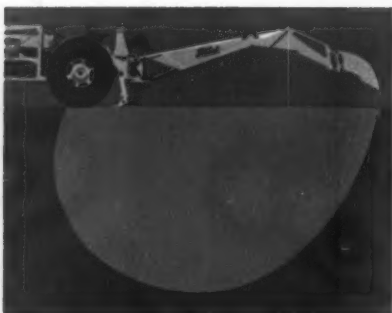


Dependable Power comes from Ford's proven gasoline, diesel or LP-gas "Red Tiger" engines.

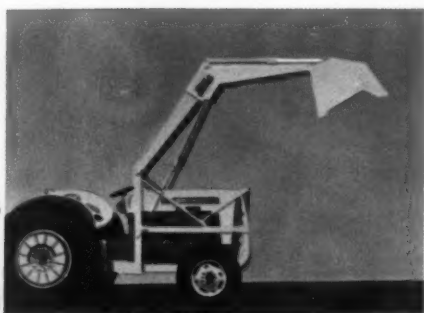
Curb Jumper, Rut Rider—5000 lb. rated capacity front axle, larger, rugged spindles, heavy drag links, powerful power steering, big 7.50:16, 6 ply tires—this front end is built to soak up the pounding of heavy work.



Slashes Labor Costs—Dig by machine, not by hand! All Ford backhoes undercut as far back as the tractor's rear axle to reduce hand digging; all have accurate controls for precision digging around existing lines, other obstacles.



Fast Truck Loader—12 second cycle, bucket position indicator, 45° dump angle, 14° roll-back, long reach, high dump heights, short over-all length—fast truck loading is this unit's specialty.



All Day Comfort—One step up swings you onto the cushioned seat . . . power steering kills ground shocks, handy foot accelerator speeds production.



Tailored to Your Jobs—Pick your transmission: 4 speed, reversing, 12 speed—over under, or Select-O-Speed . . . pick your fuel . . . pick your tires . . . choose from 7 loader buckets, 6 backhoe buckets, 5 stabilizer types . . . and choose from a long list of extra equipment for special jobs. These new Ford rigs can be your *all-day, all-job workers*.



Send me information on:

☐ Ford 2000 Industrial tractor

☐ Ford 4000 Industrial tractor

☐ Ford 720 Loader

☐ Ford 10', 12' backhoes

☐ Send name of nearest dealer

NAME _____

COMPANY _____

POSITION _____

STREET _____

CITY _____ STATE _____



Looking for something even browner?
Check Ford's big 4000 Industrial Tractor

SEE YOUR NEAREST

FORD

TRACTOR AND EQUIPMENT DEALER



Super-Triplex saves contractor \$1.84 per cubic yard in compacting backfill



Time after time, it's been proven that when an Ingersoll-Rand Super-Triplex Tamper moves in on the job, work gets done better and at lower cost . . .

On a midwestern building project, with soil composed of sandy gravel with 15% to 20% clay content, the contractor could not maintain a 95% Proctor Density on a 4" lift. His problem: compacting was costing \$2.67 per cubic yard, and results were unsatisfactory.

A demonstration of the powerful Ingersoll-Rand GT44 Super-Triplex Tamper, showed conclusively that it could compact a 12" lift to standard density—doing it quicker and at a cost of only \$.83 per cubic yard.

Triplex Tampers Assure Quality Work

Construction men, who know how important it is to have backfill with no subsequent settlement, have been quick to select the I-R Triplex Tamper.

Other Triplex Tamper Features:

Faster Operation: One man with less effort does the work of 5 men with single tampers.

Greater Safety: Wheel barrow type handles hold butts away from operator's feet.

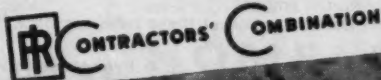
Higher Lifts: 20% higher lifts of solidly tamped ground.

Uniform Work: Wide pattern assures systematic coverage.

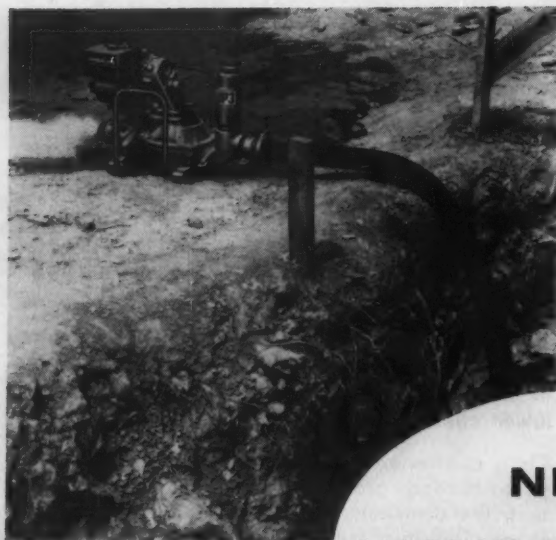
See for yourself how an I-R Triplex Tamper can speed your backfilling operations and at less cost. Call your Ingersoll-Rand AIRengineer, or write today for descriptive literature.

Ingersoll-Rand
11 Broadway, New York 4, N.Y.

THE BEST AIR EQUIPMENT FOR BETTER HIGHWAYS



198A18



**NEW
WAYS TO SAVE
MONEY...**



Homelite Pumps and Generators with 4-Cycle Engines

A brand new line of economy-priced, 4-cycle engine-driven pumps and generators has just been added to Homelite's roster of construction equipment. Now, from one sales and service source, you can get the exact carryable pumps and generators your jobs require . . . low-cost, 4-cycle engine powered equipment . . . or finest quality carryable pumps and generators powered by Homelite 2-cycle engines.

Homelite's new, self-priming pumps are available in 1½", 2", and 3" centrifugal and 3" diaphragm models. They feature new, extra-long-life CERASEAL ceramic seals, Briggs & Stratton engines with special, long-life valves and variable speed control; 28' suction lift and big pumping capacities. Homelite's new generators come in 1500, 3000 and 5000 watts sizes with quality features such as TOOLSAVER voltage regulation; Wisconsin & Clinton engines with long-life Stellite exhaust valves; and simple, trouble-free generator construction.

All Homelite 4-cycle pumps and generators are available with either gasoline or L. P. gas operated engines.

Ask for a demonstration of these new, compact, lightweight and easily carried units now.

Franchises available in some areas, write for details.

HOMELITE • A DIVISION OF TEXTRON INC., 1002 RIVERDALE AVE., PORT CHESTER, N. Y.

IN CANADA — Terry Machinery Co., Ltd.

Circle 160 on Reader Service Card



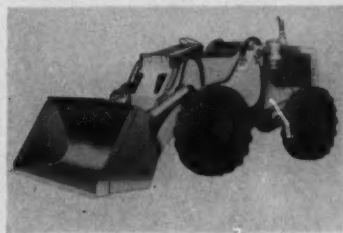
Homelite factory branches are located throughout the country. Your nearest one is as near as your phone. Call them or write for convincing demonstration or rapid service in any way.

HOMELITE

CARRYABLE PUMPS • GENERATORS
BLOWERS • CHAIN SAWS

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.



Improved Tractor Shovel

The redesigned Trojan Model 404 includes new engine options with greater horsepower, a filtered hydraulic system with a low heat generating pump, and a longer wheelbase for greater stability. The machine can be powered by either a GM 264-hp or a Cummins 250-hp diesel engine. — Trojan Div., The Yale & Towne Mfg. Co., Batavia, N.Y.

Circle 311 on Reader Service Card



Asphalt Kettle

The Aeroil KE-RA-20 asphalt kettle applies hot material directly into a joint. Indirectly heated by heat transfer oil, the material is mixed by a mechanical agitator. — Aeroil Products Co., Inc., 13 Wesley St., S. Hackensack, N.J.

Circle 312 on Reader Service Card



Hydrostatic Transmission

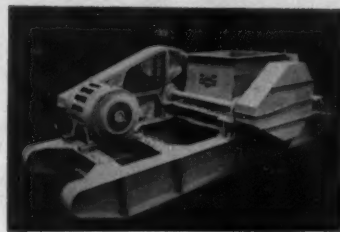
The New York Air Brake Co. has announced the start of regularly scheduled production of the Dynapower transmission, a hy-

drostatic transmission unit. It delivers full torque at all engine speeds, including idling.

The transmission consists of a fixed-displacement hydraulic motor that drives directly into the differential and a variable-displacement, axial-piston hydraulic pump that is coupled directly to the vehicle's engine. High-pressure hoses replace the conventional drive shaft, universals, gear changers, and clutches. On vehicles a single control determines both direction and speed.

The Dynapower transmission can be installed as a traction-drive for lift trucks, tractor shovels, and similar off-highway vehicles. In addition, it can operate power steering for scrapers or drum drives for truck mixers. — Watertown Div., The New York Air Brake Co., Watertown, N.Y.

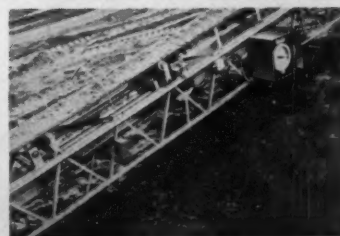
Circle 313 on Reader Service Card



Skid-Mounted Crusher

A McLanahan Black Diamond single-roll crusher and a 100-hp motor mounted on a skid-type base make up this movable crusher unit. The skid is 7 ft wide and 22 ft long. — McLanahan and Stone Corp., Hollidaysburg, Pa.

Circle 314 on Reader Service Card



Automatic Conveyor Scale

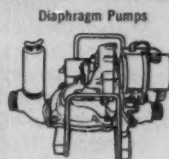
The Vey-R-Weigh automatically weighs, measures, meters, and controls the flow of bulk materials on conveyor belts. It consists of a carriage installed to support one idler on the conveyor and a remote indicating and recording instrument which may be mounted anywhere within 500 ft from the carriage. — Ramsey Engineering Co., 1853 W. County Rd. C, St. Paul 13, Minn.

Circle 315 on Reader Service Card

HOMELITE Factory Branches throughout the country sell and service Homelite's complete line of carryable construction equipment.



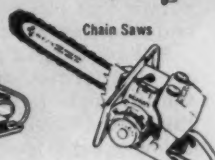
Centrifugal Pumps



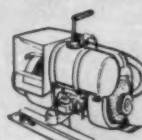
Diaphragm Pumps



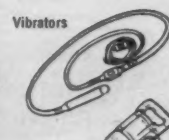
Electric Generators



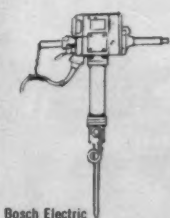
Chain Saws



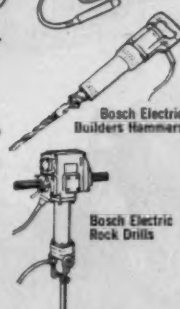
Blowers



Vibrators



Bosch Electric Paving Breakers



Bosch Electric Builders Hammers



Bosch Electric Rock Drills

HOMELITE FACTORY BRANCHES

EAST: CONNECTICUT: Greenwich, Hartford • NEW JERSEY: North Arlington, Woodbridge • NEW YORK: Albany (Latham), Buffalo, New York (North Arlington, N. J.), Rochester, Syracuse • MAINE: Orono • MARYLAND: Baltimore • MASSACHUSETTS: Boston (Allston) • PENNSYLVANIA: Altoona, Erie, Harrisburg, Hazleton, Philadelphia, Pittsburgh, Malvern • VIRGINIA: Arlington, Richmond, Roanoke • WEST VIRGINIA: Charleston, Clarksburg

SOUTH: GEORGIA: Atlanta • FLORIDA: Jacksonville, Miami • LOUISIANA: New Orleans (Metairie), Shreveport (Bossier City) • NORTH CAROLINA: Charlotte, Raleigh • OKLAHOMA: Oklahoma City • TENNESSEE: Knoxville, Memphis • TEXAS: Dallas, Lufkin

MID-WEST: ILLINOIS: Chicago (Stone Park) • INDIANA: Indianapolis • MICHIGAN: Detroit, Grand Rapids • MINNESOTA: St. Paul • MISSOURI: Kansas City, St. Louis • NEBRASKA: Omaha • OHIO: Cincinnati, Cleveland, Toledo • WISCONSIN: Milwaukee

WEST: CALIFORNIA: Fresno, Los Angeles (Alhambra), Sacramento, San Francisco • COLORADO: Denver • OREGON: Portland • UTAH: Salt Lake City • WASHINGTON: Seattle, Spokane

HOMELITE

A DIVISION OF TEXTRON INC.
1002 Riverdale Ave., Port Chester, New York

In Canada:
TERRY MACHINERY CO. LTD.

EQUIPMENT NEWS... continued

Wheel Dozer Is First of a New Line

The Model D-120 weighs 55,000 lb and is powered by a 300-hp turbocharged diesel engine. The unit is the first model of a new line of Hough Paydozers that can be converted to tractor shovels. Components for the conversion are available in an optional package. The changeover takes less than two days.

Other features include a power shift transmission with four speeds in both forward and reverse, a top speed of 26 mph, a hydraulic power-boosted steering system, power transfer differentials on both axles, and two brake pedals—one for disengaging the transmission, the other for braking with the transmission engaged. Hydraulic pressure is supplied by two pumps that can be rebuilt by removing four bolts and inserting a replacement cartridge.

The blade is 12 ft 4 in. wide and 4 ft 8 in. high. Its total forward and backward pitch is 5 deg, and the tilt angle is 10 deg per side. The blade can be raised to a height of 3 ft 2 in., and it can cut 1½ ft below ground level—The Frank G. Hough Co., 706 Seventh Ave., Libertyville, Ill.

Circle 316 on Reader Service Card



Two Sets of Controls Operate Paver

Dual control columns, one on each side of the operator's platform, make it easy to operate the SA-40 asphalt finisher. Moving the control column steers the paver and stops and starts it. Each column also contains electric switch controls for manual operation of the feeders, for raising the self-cleaning hopper sides, and for start-stop control of the tamper.

The hopper sides are raised hydraulically, and the rig's twin feeders are automatically controlled, but the manual electric switch overrides the automatic controls when necessary. An oscillating pivoted truck contact roller permits the paver to push a misaligned truck without affecting the directional control of the finisher. The SA-40 covers paving widths from 8 to 14 ft.—Barber-Greene Co., 400 N. Highland Ave., Aurora, Ill.

Circle 318 on Reader Service Card



Compactor Works in Narrow Ditches

Improvements to the Rapak self-propelled compactor enable it to work in ditches as narrow as 4 in. and up to 40 in. in depth. The unit is powered by a four-cycle engine and is equipped with a heavy duty centrifugal clutch. Rapak is one-man operated and delivers 450 blows per min. An integral one-shot lubrication system is built into the head of the machine. — Racine Hydraulics & Machinery, Inc., 2000 Albert St., Racine, Wis.

Circle 317 on Reader Service Card



Now... the
158 SERIES
rounds out a
complete new line.

TRACTORS ... from 45,000
to 60,000 lbs. GVW.

New Line Compact and Power-packed **BROCKWAY**



HUSKIES ... medium-size ... economy-wise

★ **COMPACT DESIGN—90" BBC**

- Wider choice of power: Gasoline, up to 200 hp; Diesel, up to 160 hp.
- New stronger frame with minimum weight.
- Wide track front axle.
- New cab; fiber glass engine housing.
- Enlarged frontal area and cooling system.
- Set-Aside fenders for easy maintenance.
- New improved front suspension and steering linkage.

More models to match more jobs! With addition of the brand-new 158 Series, Brockway now offers a complete line of intermediate-size Huskies ... ideal all-purpose trucks that maneuver easily in short-haul service, yet have the power range for fast, profitable, over-the-road transport, too.

These compact Huskies are low in operating cost and long on service, with many money-saving, mile-making features. They include exclusive Uni-Matched design which means that all components of Brockway trucks — power train, chassis, cab and hundreds of functioning parts — are fully coordinated in one smoothly operating unit.

This means job-matched performance and maximum economy and efficiency. Solid reasons for seeing your Brockway representative for complete details on the new line of medium-size Huskies.

BROCKWAY MOTOR TRUCKS, CORTLAND, N. Y.
Division of Mack Trucks, Inc.



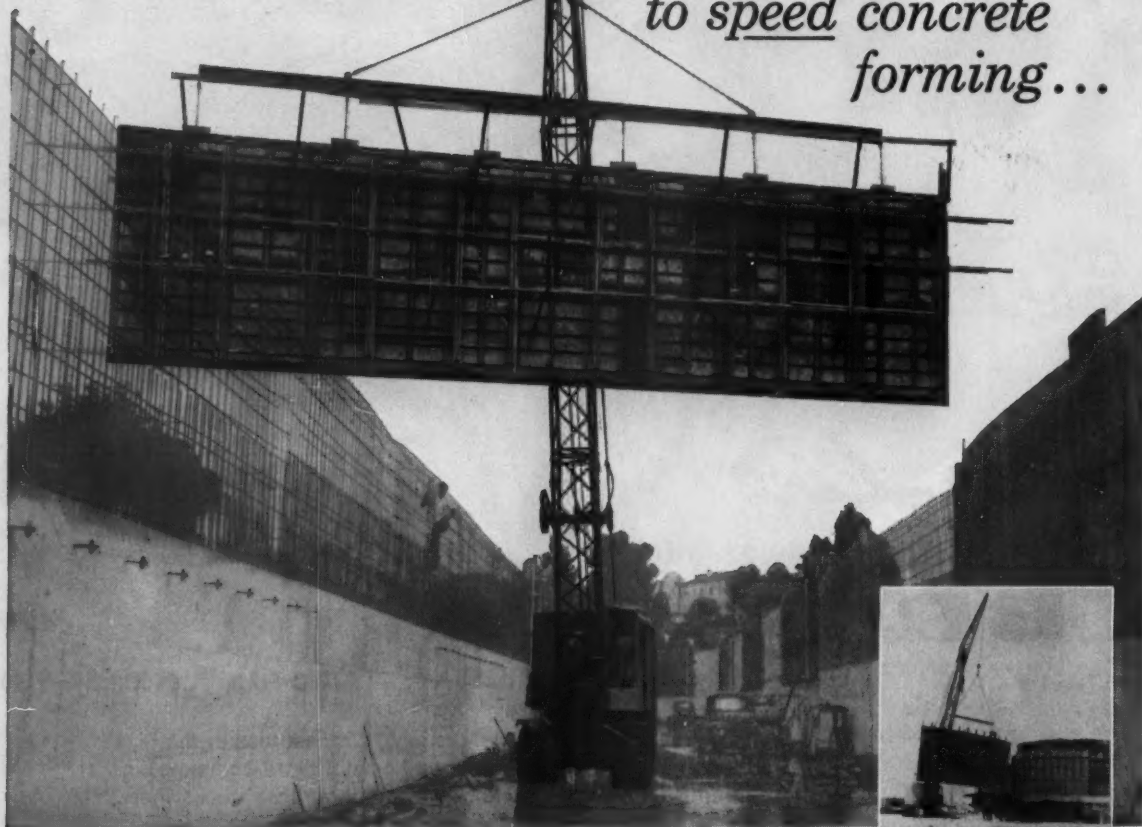
TANDEM AXLE ...
from 40,000 to 50,000 lbs. GVW.



CARGO ...
from 23,000 to 36,000 lbs. GVW.

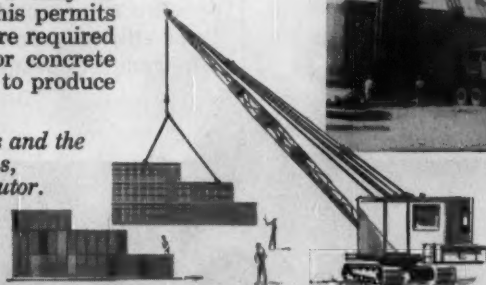
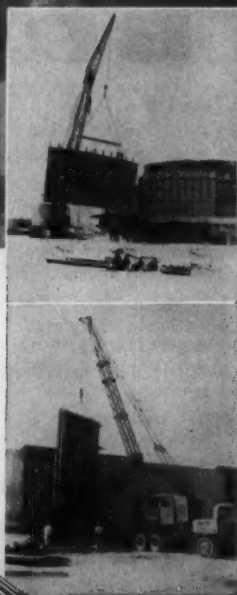
AIRBORNE UNI-FORM PANELS

*smart way
to speed concrete
forming...*



Forming speed and economy can be greatly increased by crane handling big monoliths of UNI-FORM Panels. Contractors with repetitive section forming requirements are finding that the design of UNI-FORM Panel monoliths—in which metal filler angles are used between each panel—give them greater versatility and wider application. For example . . . tie rods of any size from $\frac{1}{2}$ " to 1" may be used to tie two monoliths into a wall form. This permits using the right tie size for the job. Fewer ties are required and sections can be placed, tied and ready for concrete faster. Panels may be added or removed at will to produce any monolith required.

For complete information on UNI-FORM Panels and the UNI-FORM System in crane handling operations, write today, or ask your nearby Universal Distributor.



"Products from the Gold Tool Room"

UNIVERSAL FORM CLAMP CO. 1238 N. KOSTNER AVENUE • CHICAGO 51, ILLINOIS

BRANCH OFFICES and WAREHOUSES:

ATLANTA BALTIMORE CLEVELAND HOUSTON
LOS ANGELES SAN LEANDRO TORONTO

◀ Circle 163 on Reader Service Card
164

Circle 164 on Reader Service Card

CONSTRUCTION METHODS

EQUIPMENT NEWS...

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.



Rear-Dump Trailer Hauls 95 Tons

Weighing in at 60 tons, this 95-ton tractor-trailer is powered by a 4-cycle V-12 engine rated at 700 hp. A 19-in. single-stage converter delivers power to a four-speed power shift transmission equipped with an oil brake. The trailer rotates about the rear wheels when dumping, and the twin telescopic hoist operates at low pressures.—KW-Dart Truck Co., Kansas City, Mo.

Circle 318 on Reader Service Card



Four-Wheel-Drive Fork Lift Tractor

The capacity of Model H-30, a four-wheel-drive fork lift tractor, is 6,000 lb at a 24-in. load center and a maximum stacking height of 14 ft. The 48-in.-long standard forks are adjustable to a 48-in. width, and the mast tilts 20 deg forward and 10 deg backward.

All of the lift and tilt actions are hydraulically controlled. Included on the tractor are a power-shift transmission and torque converter, power steering, and four-wheel hydraulic brakes. Three speed ranges in each direction are available with speeds up to 21 mph. Easily converted to a tractor-shovel, the H-30 can also be obtained with a 21-ft. lift mast at reduced capacities. — The Frank G. Hough Co., Libertyville, Ill.

Circle 319 on Reader Service Card

CUTTING POWER!

51 3-Inch Holes In One Day Through 4-Inch Concrete Floors!

A contractor drilling 5000 3-inch holes in a new office building finished 51 in one day, and once cut 21 in two hours! Going through 3-4 inches of reinforced concrete with Longyear diamond bits took 1 to 1½ minutes, and Longyear diamond bit life was as high as 100 feet. The "305" drill was equipped with a new, compact vacuum hold-down unit, making set-up lightning-fast.



For more detailed information on application of Longyear drills, write Department 5A.



E. J. LONGYEAR CO.

76 S. Eighth Street, Minneapolis 2, Minnesota
Phone: FEderal 9-7631

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CONTRACTORS

2-WAY RADIO from \$134.95

• Cut costs—speed construction! Instant contact on the job! Save valuable time as you cut operating costs with the Viking "Messenger"! Used by thousands of truckers, contractors and construction crews throughout the country! Finest Citizens' Transceiver available—excellent sensitivity and selectivity for maximum range. 23 channel coverage—instant choice of any 1 of 5 channels. Maximum legal power—dozens of operating and convenience features—easy to install anywhere. Complete with crystals for one channel.



VIKING
Messenger

SEND FOR FREE COLOR BROCHURE!

• Send full details on the "Messenger"

NAME _____

ADDRESS _____

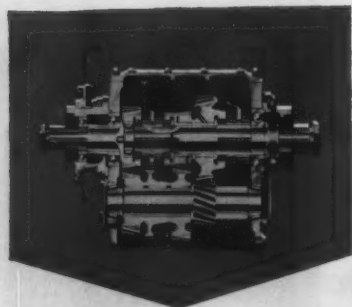
CITY _____ STATE _____

E. F. JOHNSON COMPANY

2002 Tenth Ave. S.W. • Waseca, Minnesota

Manufacturers of the world's most widely used personal communications transmitters!

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Specify FULLER Specify the MODEL

For medium-heavy duty
trucks and tractors specify the
FULLER '65 SERIES
3-SPEED AUXILIARY

- High capacity
- Widest range of ratios
- Top-mounted power take-off optional
- Low initial cost, reduced maintenance
- Available from all truck manufacturers on specification

65 SERIES (Medium-heavy-duty) RATIOS

MODEL	SPLITTER RATIOS		DEEP REDUCTION
	High	Inter-mediate	Low
3-A-65	.754	1.00	2.221
3-B-65	.804	1.00	1.239
3-C-65	.754	1.00	1.239
3-D-65	.804	1.00	2.221
3-E-65	.804	1.00	1.74
3-F-65	.754	1.00	1.74
3-G-65	1.00	1.32	2.221
3-H-65	1.00	1.32	1.74

Specify

Specify the MODEL

**FULLER TRANSMISSION
DIVISION**

EATON MANUFACTURING COMPANY
KALAMAZOO, MICHIGAN

Circle 166 on Reader Service Card

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

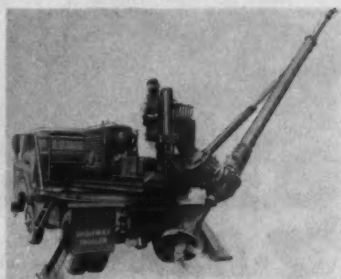


Pneumatic-Tired Roller

Designed for shoulder widening, patching, and other small jobs, the Air-Pac pneumatic-tired roller turns in a 10-ft radius with a rolling width of 36 in. Four oscillating wheels are located in the front of the machine, and five wheels are mounted in the rear. All wheels are equipped with 4-ply, 4.00x12, smooth-faced tires.

The Air-Pac weighs 1,970 lb empty and has a 16 cu-ft ballast capacity. Two water tanks with a combined capacity of 26 gal supply water to the spray bars. —Rosco Mfg. Co., 3128 Snelling Ave., Minneapolis 6, Minn.

Circle 320 on Reader Service Card

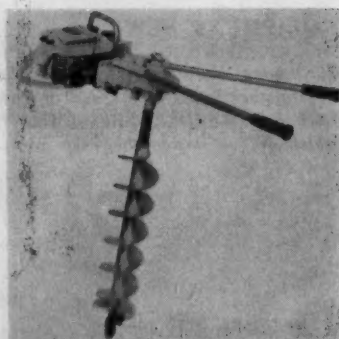


Earth Borer

Designed to operate with augers up to 60-in. in dia, the HFMS earthboring machine contains a hydraulic Kelly bar that provides variable speeds in feed and retraction.

A three-stage telescoping derrick attains a 42-ft sheave height. Also available is the HCBMS hydraulic digger for holes up to 42 in. in dia and depths of 35 ft. —Highway Trailer Industries, Stoughton, Wis.

Circle 321 on Reader Service Card



Hand-Held Earth Drill

An automatic clutch on this power earth drill disengages at idling speeds so the unit can be moved without shutting off the gasoline engine. Using either 6-in. or 9-in. augers, the 25-lb drill can be purchased as a complete unit with a McCulloch ONE/41 chain saw engine or as a separate attachment. —McCulloch Corp., 6101 W. Century Blvd., Los Angeles 45, Calif.

Circle 322 on Reader Service Card

Motor Grader

LeTourneau - Westinghouse has added the Model 330-H to its line of motor graders. It is a 100-hp unit, with a choice of power from either a GM 3-71 or a Cummins V-6-BI engine. A constant mesh transmission provides eight forward and four reverse speed ranges with a maximum speed of 24 mph. —LeTourneau-Westinghouse Co., 2301 N.E. Adams St., Peoria, Ill.

Circle 450 on Reader Service Card



Mobile Cement Bin

Portable ground storage cement bins that can be installed in any existing cement batching setup are available in 465, 555, and 645-bbl capacities. The units are built with a fifth-wheel hitch to fit standard tractors and trucks and a complete rear axle assembly with air brakes and 12-ply, 10x20.00 tires. Each bin is equipped with an inside ladder, emergency slide gate, bin-flow pads, discharge valve, and an air delivery intake unit. —Clark Industries, Construction Equipment Div., 375 E. Fifth Ave., Columbus 1, Ohio.

Circle 323 on Reader Service Card

CONSTRUCTION METHODS



Scraper performance is important through

EVERY INCH OF THE WORK CYCLE

Allis-Chalmers' new TS-360 Motor Scraper—30 yards heaped—was designed with four major performance factors in mind: acceleration under load, sustained haul speeds, exceptional maneuverability and full-power spreading on the fill.

To achieve this performance, the 340 hp scraper is equipped with a Fuller 5-G-1520 5-speed Transmis-

sion. The heavy-duty, constant-mesh, spur-gear transmission features the Fuller Air-Actuated Countershaft Inertia Brake, which permits quick, easy up-shifts without double-clutching. Activated simply by pushing a button, the countershaft brake helps maintain momentum during shifts for maximum acceleration and sustained speed throughout the entire work cycle.

The 5-G-1520 is also equipped with the Fuller Pressure Lubrication and Filtration System which keeps gear oil clean, provides longer gear and bearing life and higher equipment availability.

Ask your equipment dealer about the Fuller Transmission designed to get more work from *your* equipment, put more profit in *your* operation.

FULLER TRANSMISSION DIVISION
EATON MANUFACTURING COMPANY
 KALAMAZOO, MICHIGAN

Sales & Service West. Dist. Branch, Oakland 6, Cal. • Southwest Dist. Office, Tulsa 3, Okla. • Automotive Products Co., Ltd., Brock House, Langham St., London W.1, England, European Rep.

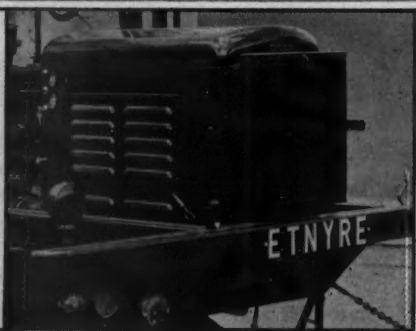
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FEBRUARY, 1961

167

Once more...

FORD INDUSTRIAL ENGINES
are selected for compactness
and outstanding performance



**NEW ETNYRE MODEL FX-500
"BLACK TOPPER"...**

designed for maximum payloads... and dependable, economical operation!

It's easy to see why Etnyre chose a Ford Industrial Engine for their FX-500 "Black Topper" . . . Ford engines deliver the kind of peak performance that construction work requires. Dependability and economy of operation are just *two* of the many advantages enjoyed by OEM's using Ford Industrial Engines. They're *compact* engines, allowing greater freedom of equipment design, and delivering *more horsepower per pound of engine weight than ever before possible!*

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Only Ford offers a full line of modern, overhead-valve design engines to meet every power requirement.

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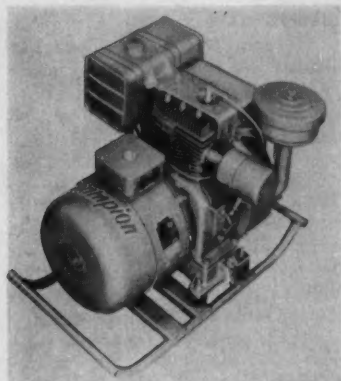
West of Rockies write to:

→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 6787, LOS ANGELES 22, CALIF.
→ FORD INDUSTRIAL ENGINE DEPT., P.O. BOX 1666, RICHMOND, CALIF.

Circle 168 on Reader Service Card

EQUIPMENT NEWS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

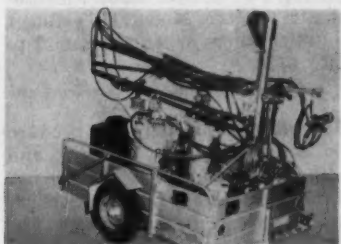


Portable Electric Plants

Champion's 180-cycle portable electric plants feature an automatic gas saver that idles the engine when tools are not in use. The 2,500-w generator contains two 230-v, 3-phase outlets and two 115-v dc outlets.

Also available are 60-cycle generators with capacities ranging from 1,000 to 3,500 w. These generators are single-phase, 115-v ac units with two outlets.—Champion Mfg. Co., 3700 Forest Park Ave., St. Louis 8, Mo.

Circle 324 on Reader Service Card

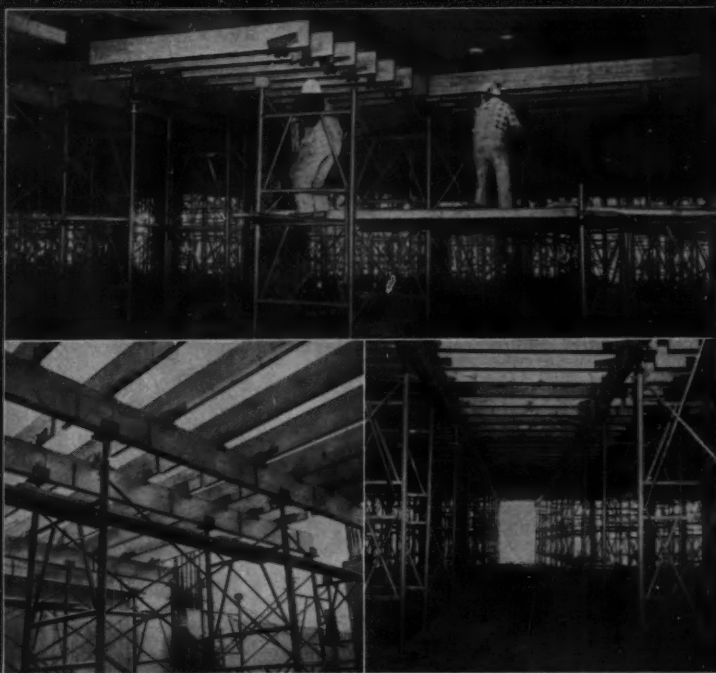


Trailer-Mounted Spray Gun Shoots Glass Fibers

Equipment needed for spraying glass fibers can be bought as a trailer-mounted rig that includes a gun, air compressor, resin containers, boom, regulators, and operating controls. The trailer bed can be lowered to the ground hydraulically. The plant contains a 30-ft boom and special hoses, reaching a 40-ft spraying dia. The spray plants range in price from \$3,195 to \$17,995. The unit shown costs \$7,700. — Spray-Bilt, Inc., 3605 E. 10th Ct., Hialeah, Fla.

Circle 325 on Reader Service Card

here's DOUBLE shoring capacity!



SAFWAY HEAVY DUTY FRAME SHORING

carries loads on 50% fewer frames;
cuts erection and dismantling time

CARRYING up to 20,000 lbs. per frame, this equipment has twice the capacity of standard steel frame scaffolding. Thus any given load can be supported on half as many frames . . . with corresponding savings in assembly and dismantling time, transportation and storage. Also, heavier beams, slabs, roofs, etc., can be shored safely at virtually any height.

LOAD DISTRIBUTION—Frames carry 10,000 lbs. on each vertical leg—or 5,000 lbs. per leg plus 10,000 lbs. on high load-bearing top horizontal.

FEW PARTS—Only 3 frame sizes with screw jacks meet all job height requirements.

PRECISION HEIGHT ADJUSTMENT—With heavy duty screw jacks at the top, bottom or both.

TOOL-LESS ASSEMBLY—Frames mount on coupling pins; cross-braces mount on studs with wing nuts.



SAFWAY STEEL PRODUCTS, INC.
6228 W. STATE ST., MILWAUKEE 13, WIS.

Circle 169 on Reader Service Card

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FOR
BULLETIN
112A



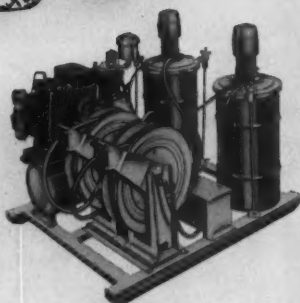
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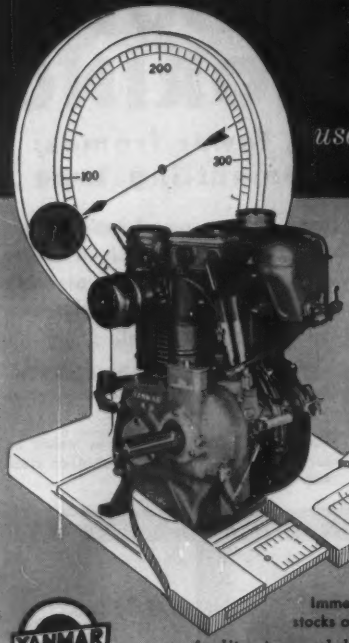
See Phone Book Yellow Pages "Lubricating Equipment" for Graco Suppliers

Circle 170 on Reader Service Card

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 SIZE? ECONOMY?

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**AIR COOLED MODELS—
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Circle 203 on Reader Service Card

New Product Briefs

For more information, circle the key number found at the end of each item on the **READER SERVICE CARD**, which is just inside the back cover.

BUILDERS' SAW cuts 2½ in. deep at 90 deg or 2 1/16 in. at 45 deg; it idles at 6,000 rpm. The blade guards are wide enough to accept abrasive blades for stone, metal, or plastics.—Porter-Cable.

Circle 326 on Reader Service Card

TRUCK MIXERS can be fitted with winterized circulating and quick-drain water systems including an air pressure water injector that replaces a pump for forcing the flow of water.—Challenge-Cook.

Circle 327 on Reader Service Card

WELDER, Model SGAD-225-L, produces 300 amp at 30 v ac, or 225 amp at 30 v dc, and provides 115/230-v, 60-cycle ac power and can produce 115-v dc power while welding.—National Cylinder Gas.

Circle 328 on Reader Service Card

BRUSH CUTTER is powered by two 132-hp engines, each driving one of two all-welded conical cutting drums. The 32,000-lb Marden PB-7 clears 3½ acres per hr working at a speed of 4 mph.—Marden Mfg.

Circle 329 on Reader Service Card

VIBRATOR is powered by a 1-hp electric motor and is available with ¾, 1¼, 1½, or 2-in. heads. Flexible shafts for the Model EU Midget vibrator range in length from 2 to 21 ft.—Stow.

Circle 330 on Reader Service Card

ARC WELDERS in four sizes produce dc currents of 300, 400, 500, and 650 amp at 40 v, 60% duty cycle. Prices for the three-phase rectifier welders range from \$610 to \$1,020.—Lincoln Electric.

Circle 331 on Reader Service Card

VIBRATING SCREENS now incorporate a welded H-beam base and a new fully enclosed spring and rubber mount suspension system. The screens are suitable for cable suspension.—Deister Machine Co.

Circle 332 on Reader Service Card

LOADER ATTACHMENT for the Detroit 44-35 tractor (CM&E, Aug., p. 166) handles a ¾-yd bucket. Lifting capacity is 3,000 lb, and dumping clearance under the bucket lip is 8 ft.—Detroit Tractor.

Circle 333 on Reader Service Card

continued on page 173

CONSTRUCTION METHODS



The largest ever built, these 165-ft-high, 400-ft-long antennas are arranged in mile-long, semi-circular groupings near Thule, Greenland, and Clear, Alaska. They will provide a multi-thousand-mile warning of a ballistic missile attack.

Bethlehem tie rods in the BMEWS . . .

FOR THE THULE INSTALLATION:

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Metcalf & Eddy, Boston

SUPERVISING AGENCY:
U.S. Air Force Civil Engineers

CONSTRUCTION AGENCY:
U.S. Army Corps of Engineers

CONTRACTORS: Peter Kiewit Sons' Co., Omaha,
sponsor, with S. J. Grove and Sons' Co.,
Minneapolis, Condon-Cunningham, Inc., Omaha,
and Al Johnson Construction Co., Minneapolis

DESIGNER AND FABRICATOR:
D. S. Kennedy & Co., Cohasset, Mass.

SURVEILLANCE SUBSYSTEM CONTRACTOR:
General Electric Co.

PRIME SYSTEM CONTRACTOR:
Radio Corporation of America

Giant radar antennas are the exposed backbone of the U. S. Air Force's Arctic BMEWS (Ballistic Missile Early Warning System) installations. The antennas are built to withstand the severity of 185-mph-winds and temperatures to 65 degrees below zero. Some 1800 tons of Bethlehem single- and multiple-unit, specially heat-treated, nickel-alloy steel tie rods, ranging from 15 to 40 ft in length, are serving as important structural bracing.

Bethlehem tie rods are most often used to stabilize building foundations and waterfront structures. Our single-unit tie rods can be supplied up to 65 ft long—multiple-unit rods in *any lengths*. Cut-thread tie rods, plain or upset, in diameters through 4½ in. Rolled-thread rods in diameters through 1½ in. They can be ordered straight or bent, asphaltum-dipped or hot-dip galvanized.

For full information simply call our nearest Bethlehem sales office. Or write to us at Bethlehem, Pa.

BETHLEHEM STEEL COMPANY, Bethlehem, Pa.
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for Strength
... Economy
... Versatility

BETHLEHEM STEEL



Get Long-Time Positive Action with **LIPE TC** **Constant Capacity Clutch**

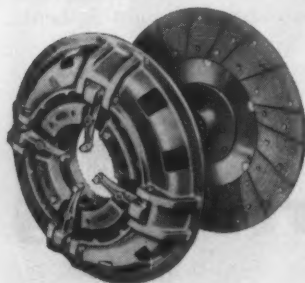


Full torque capacity for the entire life of the friction material! The TC non-adjustable, spring loaded, dry-plate clutch compensates for fading pressure of expanding springs. The toggle linkage maintains full pressure ... smooth, chatter-free engagement.

A massive plate, finned for rapid radiation, is cooled by effective currents of air,

preserving friction material. Inner cooling protects chrome silicon springs from overheating, loss of temper.

Simple to maintain: No expensive tear downs for part replacement. Automatically compensated pressure eliminates frequent adjustments: Less down time, longer life and lower overall cost per hour. That's why ... *the trend is to LIPE!*



● Write for full information on *LiPe TC Clutches*. Available in 15½" and 17" single- and two-plate types—torque capacity range of 400 to 4000 ft.-lbs.



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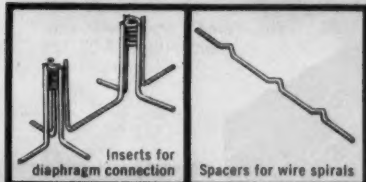
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Tyscru for lifting

Strand
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for depressing wires

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diaphragm connection

Spacers for wire spirals

Concrete Products



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anchoring and hanging

Special
Chairs for Void supports

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These products have been designed and engineered, with the know-how gained thru 50 years of experience, to meet the needs of new, improved techniques in strand deflection, void support, lifting of an anchoring to prestressed members.

Shown here are a few of the many Richmond-engineered products for the prestressed concrete construction industry. For more information about them, or help with any specific concreting problem, write to:



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Circle 204 on Reader Service Card

NEW PRODUCT BRIEFS

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

LUBRICANT PUMP, Model 7138 VP, is hand operated and provides either low-pressure volume delivery or delivery up to 5,000 psi. A special control selects the type of delivery needed.—Stewart-Warner.

Circle 334 on Reader Service Card

TORCH uses electrodes ranging from 1/4 to 3/8 in. and is designed to produce grooves or bevels in heavy plate. The T-5 torch also can handle gouging for weld preparation and descaling.—Arcair.

Circle 335 on Reader Service Card

MATERIALS BUGGY rides on three wheels and is operated by walking driver. The WN-12 Scoot-Crete is 72 in. long and carries 1 ton or 12 cu ft. It is powered by a 9.2-hp engine.—Getman Brothers.

Circle 336 on Reader Service Card

WELDING OUTFIT costs \$99.99 and includes a torch with three heads for welding up to 3/8 in., a cutting nozzle for cutting up to 2 in., hose, friction lighter, instructions, and goggles.—Linde.

Circle 337 on Reader Service Card

BUCKET PUMP dispenses fluid lubricants or greases at pressures of 2,000 psi or 4,500 psi. Output at the lower pressure is 0.37 oz per cycle; at the higher pressure it is 0.95 oz.—Lincoln Engineering.

Circle 338 on Reader Service Card

PAVING BREAKER weighs 87 lb and is 31 1/2 in. long and 14 in. wide. The Davey-Holman Model SS25 has a self-seating poppet type throttle valve that operates in a replaceable bushing.—Davey Compressor.

Circle 339 on Reader Service Card

DRUM WARMERS handle 55-gal drums in horizontal position and are available for heating ranges from -60 to 250 deg and 100 to 450 deg. The units operate on three-phase current.—Harold L. Palmer.

Circle 340 on Reader Service Card

FAN DRIVE for heavy duty trucks is controlled by electromagnetic clutch that engages or disengages automatically and maintains a constant engine operating temperature.—International Harvester.

Circle 341 on Reader Service Card

SHORT CUT TO LONG LINES



Save Work and Speed the Job with NAYLOR Pipe and Wedgelock Couplings

For air, water and ventilating lines, you'll save time and money with this NAYLOR combination.

NAYLOR pipe is light in weight, easy to handle and install. Its lock-seamed, spiralwelded structure assures extra strength and safety.



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Write for Bulletin No. 59 on pipe, fittings and couplings.



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60 East 42nd Street, New York 17, N. Y.
Circle 173 on Reader Service Card



2100 frames of modern "Trouble Saver"® Sectional Steel Scaffolding make *efficient* working platforms on an 18-story demolition job, by Lippsett, Inc., in New York City. At right,



only 32 PS Co. Sidewalk Canopy Frames provide *safe* pedestrian protection during overhead renovation, by Banta Brooks, contractor, on American Bank building, Lansing, Michigan.

On Large Jobs . . . or Small It's The Method That Adds Efficiency and Safety

. . . and you get it — with modern PS Co. Scaffolding and Shoring Methods.

Steel scaffolding and shoring are important factors in the overall efficiency and safety of construction jobs, large or small. Yet *the method* of applying scaffolding and shoring to the job at hand is just as important.

PS Co.'s modern scaffolding and shoring methods fit the widest range of equipment to the exact requirements of the job at the lowest possible cost. These methods are constantly developed and refined by meeting the varying needs of all types of contractors and sub-contractors, day in and day out.

Engineering help is available through 24 branch offices. At each of these locations, warehouses stock the many types of scaffolding used when recommending the correct method for large or complicated jobs, or for small or routine jobs where *the method* is also important.

PS6

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Circle 174 on Reader Service Card



GRADE With "carry-type scraper" action, grade with inch-close labor-saving accuracy. The earth "boils" into this TD-9 Four-in-One!



STRIP Set the 4-in-1's clam in "carry-type scraper" position—strip sod or topsoil precisely! Get jobs other rigs can't do!



SPREAD On-the-go, put down a layer of topsoil, fill dirt, or "cover" with exclusive 4-in-1 "carry-type scraper" accuracy!

Only clam-action 4-in-1's multiply your money-making ability!

Why limit your income to what an old-style single-action loader, or any other limited-duty rig can earn you? Prove to yourself each big-capacity 4-in-1 action "doubles" for one or more special-duty machines—each action gives you an unlimited choice of working positions! See how only the clam-action 4-in-1 can multiply your ability to make money. Let your International Drott Distributor demonstrate!

5 Four-in-one sizes: $\frac{3}{4}$ to 3 cu. yd. capacity.



International Harvester Company, Chicago 1, Illinois

INTERNATIONAL DROTT

Drott Manufacturing Corp., Milwaukee 15, Wisconsin

BACK-DRAW Pull down materials wholesale from the sand or gravel bank—and grade hard-to-get-at slopes with 4-in-1 back-draw action!

DO SHOVEL WORK Apply power-shovel-like 4-in-1 breakout power as this 3-cu. yd. TD-20 does—to dig up concrete slab, excavate hard materials.

PICK-UP "Surround" elusive loose materials without "chasing" them. Note this TD-6 Four-in-One. Just place open 4-in-1 over them, close the clam, and load!

BULLDOZE Open the 4-in-1's clam and you've got a full-capacity, earth-rolling dozer—depth-regulated by positive "radius control"!

GRAB Only the clam-action 4-in-1 lets you sit, grab, lift, and load "impossibles" like stumps, concrete, and rubble of all kinds!

BOTTOM-DUMP End the sticky materials problem, for good! Opening the clam of this TD-15 Four-in-One pulls material from bucket surfaces—gravity pull does the rest!



ON ROAD WORK—

Tamping fill around 4 ft. concrete pipe culvert on New York State Thruway Extension near West Seneca, N.Y. The Barco Rammers are owned by S. J. Groves & Sons Co., Syracuse, N.Y. (Photo: CONSTRUCTIONER)

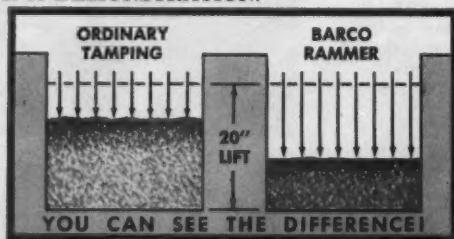


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CHECK THE RECORDS for soil compaction on every top ranking highway, toll road, thruway, or freeway built in recent years and you will find Barco Rammers!

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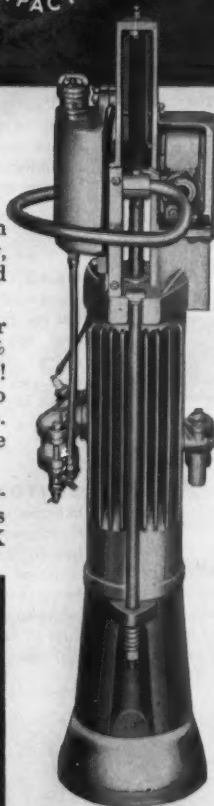
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Circle 176 on Reader Service Card



NEW Publications

These catalogs and bulletins from manufacturers contain useful information about construction equipment and materials. To obtain a copy of the items you want, circle the appropriate numbers on the READER SERVICE CARD just inside the back cover.

WELDING METALLURGY—A pocket-size booklet on welding metallurgy is reprinted from the Welding Handbook. It includes structures of metals, temperature changes in welding, fractures in metals, and properties of metals. The 122-p. booklet is priced at \$2 a copy.—American Welding Society Information Center, 33 W. 39th St., New York 18, N.Y.

Circle 342 on Reader Service Card

FRONT-END LOADERS—An 8-p. booklet presents details of Caterpillar's new line of wheel Traxcavators, the 80-hp Model 922, the 105-hp Model 944, and the 140-hp Model 966. Bucket sizes range from 1 1/4 yd to 2 3/4 yd.—Caterpillar Tractor, Peoria, Ill.

Circle 343 on Reader Service Card

HYDRAULIC JACKS—The entire line of Simplex hydraulic jacks and pullers is covered in Hydraulic 60, a 16-p. catalog. The publication contains specifications and size charts for the latest models with self-contained, remote-controlled hand pumps and models actuated by electric, gasoline, or air pumps.—Templeton, Kenly & Co., 2525 Gardner Rd, Broadview, Ill.

Circle 344 on Reader Service Card

BLADE CONTROL—A 4-p. folder illustrates the Preco Dial-A-Slope, an automatic blade control that can be installed on any current model L-W grader, from the 85-hp 330 to the 190-hp 660. The electronic unit automatically holds the blade at a desired transverse slope.—LeTourneau-Westinghouse Co., Peoria, Ill.

Circle 345 on Reader Service Card

HEAVY EQUIPMENT—Eimco's major products are listed in an 18-p. booklet. Among the items are tractors, loaders, mining equipment, process and filter equipment, and foundry products.—The Eimco Corp., P.O. Box 300, Salt Lake City 10, Utah.

Circle 346 on Reader Service Card

continued on page 179

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Handbook of Applied Hydraulics, Editor-in-Chief, C. Davis, 2nd Ed. Data and methods covering all phases of hydraulic engineering.

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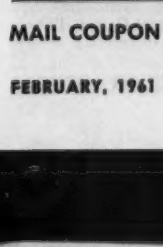
Estimating Construction Costs by R. L. Pourifoy, 2nd Ed. Techniques and data to help you make accurate estimates.

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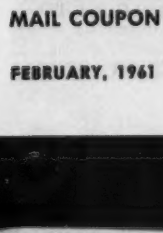
Soil Mechanics, Foundations, and Earth Structures by G. T. Tchebotaroff. Gives principles and practices.

Publisher's Price \$8.50
Club Price, \$7.25



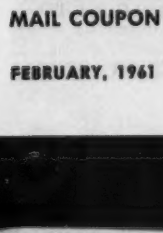
Statically Indeterminate Structures by J. Benjamin. Approximate analysis by deflected structures and lateral load analysis.

Publisher's Price, \$11.00
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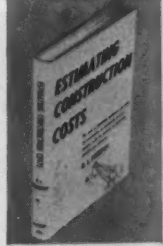
Materials Handbook by G. Brady, 8th Ed. Provides helpful facts on properties, uses, sources for thousands of natural and synthetic materials.

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Company

NO RISK GUARANTEE If not completely satisfied, you may return your first shipment within 10 days and your membership will be canceled. CM-2

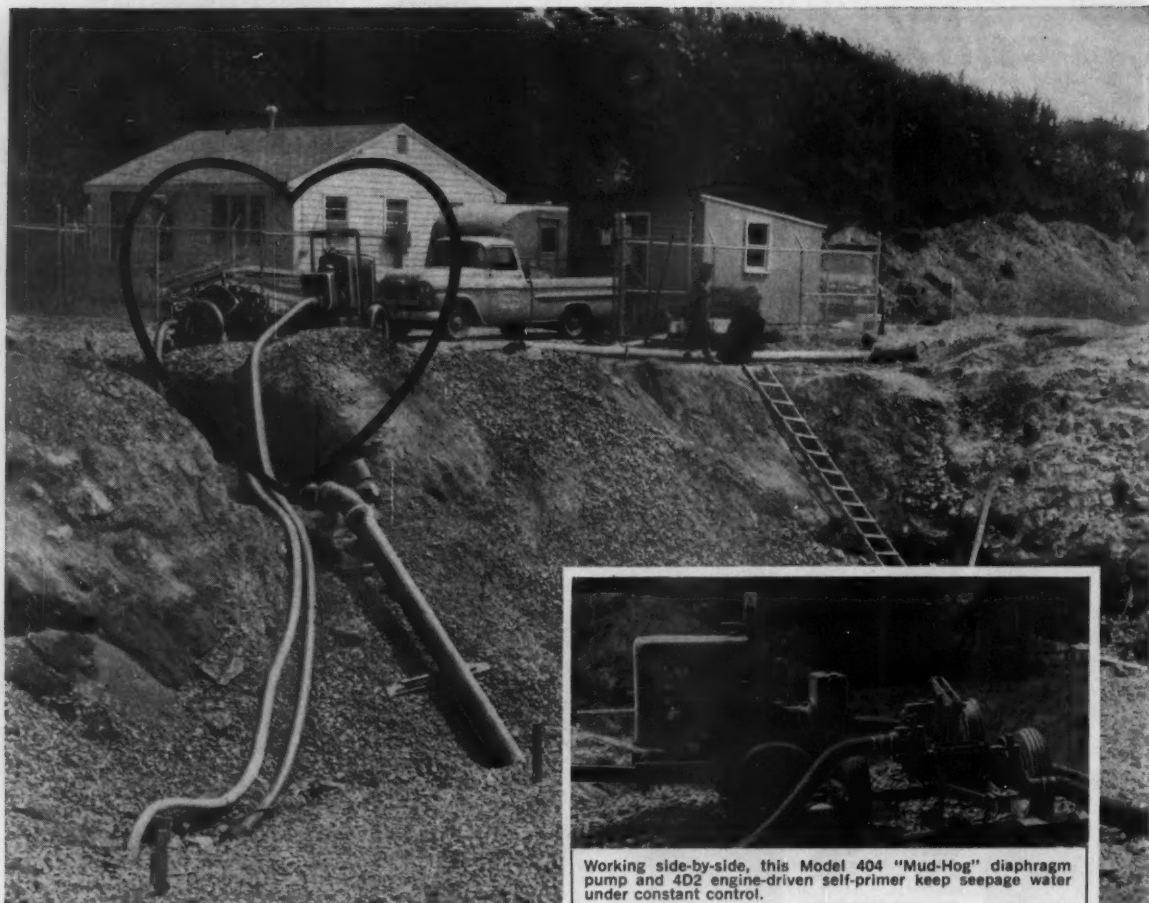
MAIL COUPON AT RIGHT TODAY

FEBRUARY, 1961

Circle 177 on Reader Service Card

177

The **HEART** of seepage water control
is the **PUMP** on the job!



Working side-by-side, this Model 404 "Mud-Hog" diaphragm pump and 4D2 engine-driven self-primer keep seepage water under constant control.

MARLOWS Pump "Round the Clock" On Flood Control Project!

The firm of Paino & LaCava is currently working on a \$750,000 "Spot Brook Flood Control" project in Malden and Melrose, Mass. The project calls for building 4,500 feet of open cut area and 1,100 feet of culvert. The open cuts are 40 feet wide at the bottom, 8 to 15 feet deep and 80 feet across at the top. The bottom of the cut was lined with tunnel spoil and then concrete was poured along the sides and the base.

To control seepage water rising up under the lining of spoil and make it possible to pour the concrete, three Marlow pumps were placed in 24-hour service. Two of them were 404 "Mud-Hog" dia-

phragm pumps and the third unit, a 4D2 self-priming, engine-driven pump, was only used when rain and run-off added to the seepage water problem. The pumps were run 24 hours a day — for eight months — without interruption! Jim Dolan, Project Superintendent, in the construction business all his life, best expressed Marlow dependability when he said

"These Marlows were the best pumps I ever used!"

If water's a problem on your next construction job, let Marlow help you solve it. Marlow makes a complete range of AGC rated self-priming and diaphragm pumps. Write today for Bulletin C-09 and the name of your Marlow dealer.



MARLOW PUMPS

Division of Bell & Gossett Company
MIDLAND PARK, NEW JERSEY

0.102

Longview, Texas • Morton Grove, Illinois

Circle 178 on Reader Service Card

CONSTRUCTION METHODS

HOW "CONCRETOR" The Linden Crane CLIMBING-CRANES REVERSE RISING CONSTRUCTION COSTS



Peter Kiewit Sons utilizes "CONCRETOR" CLIMBING-CRANE in effecting important savings of time, labor, money on own office building in Omaha, Nebraska.

The "CONCRETOR" CLIMBING-CRANE goes up with the building while work is in progress... 2-3 floors at a time... the sky's the limit. Climbs by its own hoisting winch on floors or inside elevator shafts.

"CONCRETOR" CLIMBING-CRANES efficiently place loads "on a dime"... up to 100 foot radius due to the 360 degree swing of its 100 foot jib. They eliminate the need for expensive rehandling of materials over unnecessary ramps and runways, substantially lowering operating costs. Recommended for all types of construction including industrial, apartment and office buildings, silos, water towers, bridges and viaducts.

"CONCRETOR" CLIMBING-CRANES cost about half of what you'd expect to pay for earth-bound cranes of similar capacity. With ordinary use, the cost can be amortized over a period of about 2 years.

CHOICE OF 4
MODELS —
RENTAL/
PURCHASE
PLANS.
Delivered any
where in U. S.
Factory-trained
service
engineers
available.

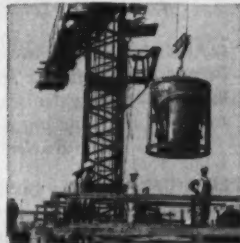
For Literature
Address
Dept. CM-2

B. M. HEEDE, INC.

30-01 37th Avenue, Long Island City 1, N. Y.
B. M. HEEDE CALIFORNIA, INC.
630 Sixth Street, San Francisco 3, California
DISTRIBUTOR FRANCHISES AVAILABLE in a few
selected territories. Write Dept. CM-2.

Circle 205 on Reader Service Card

FEBRUARY, 1961



Crane is remote-controlled by one man from working deck with 3 1/2 lb. electronic panel.

NEW PUBLICATIONS . . .

For more information, circle the key number found at the end of each item on the READER SERVICE CARD, which is just inside the back cover.

CONCRETE ACCESSORIES —

Bulletin PR-2 lists a comprehensive selection of accessories of various capacities, design, and cost for precast and prestressed concrete. Included are a variety of anchors, pick-up inserts, and fastening and lifting hardware.—Superior Concrete Accessories, Inc., King St., Franklin Park, Ill.

Circle 347 on Reader Service Card

HEADWARMERS—A folder describes a full line of different types of headwarmers worn under safety hard hats.—Parker Safety Equipment Co., 785 Lyons Ave., Irvington 11, N.J.

Circle 348 on Reader Service Card

ASPHALT PLANTS — A 32-p. brochure covers a full line of automatic, semi-automatic, and power control asphalt batch plants. It also includes matched auxiliary equipment, such as dryers, dust collectors, wet collectors, automatic fines metering systems, and aggregate handling and feeding equipment.—Barber-Greene Co., 400 No. Highland Ave., Aurora, Ill.

Circle 349 on Reader Service Card

SPREADERS — Features of two new Rex concrete spreaders are now available. Bulletin 60150 and specification sheet 60 S give details of Model MW, a general purpose manual-widening spreader. Bulletin 60152 and sheet 60PFS cover the self-widening Model PW.—Chain Belt Co., Milwaukee 1, Wis.

Circle 350 on Reader Service Card

HEATERS—A new catalog covers the complete line of direct-fired oil-burning portable space heaters ranging from 100,000 to 1,000,000 Btu.—Stow Mfg. Co., 31 Shear St., Binghamton, N.Y.

Circle 351 on Reader Service Card

CURING COMPOUNDS — Catalogs describe Horncure concrete curing compounds (100% resin base, white pigmented, and wax resin base), and give their advantages, applications, specifications, and required quantities.—A. C. Horn Companies, Div. of Sun Chemical Corp., 2133 85th St., North Bergen, N.J.

Circle 352 on Reader Service Card



ACROW adjustable steel shores... set in less than one minute by one man... removed in seconds. Hair-line adjustment... allows corrections even after pouring. Patented stud collar automatically cleans threads during stripping... your ACROW SHORES are ready immediately for next use.

All steel construction gives safer shoring... Highest load-carrying capacity. Each is a self-contained unit... no loose parts can be misplaced.

Made with standard head 6"x6" or beam type head 14"x4". Flat type head fits any size stringer. Working ranges 3'4" to 16'.

And for quickest, strongest, safest slab-decking supports at lower cost... use ACROWSPAN horizontal shoring, only two basic components. Makes ideal companion for the ACROW SHORE—the world's fastest selling shore, OVER 4,000,000 IN USE.



231 WASHINGTON AVENUE, CARLSTADT, N. J.
In New Jersey: Phone WEbsler 3-0450
In New York: Phone LONGacre 4-6753

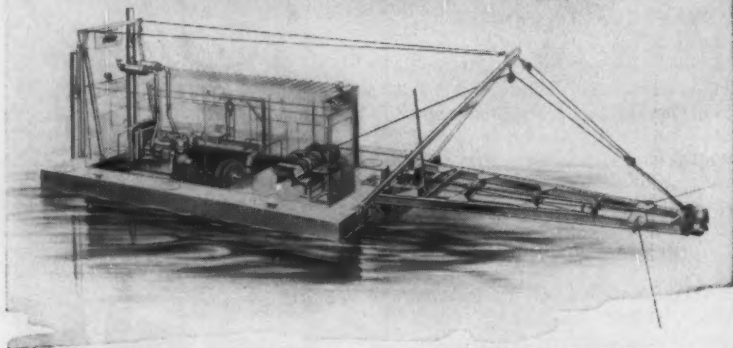
Literature
C-15
on request.

ACROW Denver, Inc., 1035 So. Huron St. (Denver, Colorado • Phone SP 7-5486)

NEW YORK • CHICAGO • DENVER
TORONTO • MONTREAL

Circle 179 on Reader Service Card

Ellicott "Dragon" Model Portable Dredges



**The Dredges Of Advanced Design
Whose Performance
Is Proved Not Promised**

Here are some of the reasons:

1. These are dredges in which portability is a reality not a possibility. Patented 2-piece hull disassembles quickly and can be reassembled on shore or in the water.
2. All components designed and built by Ellicott whose centralized engineering and manufacturing responsibility insures quality control.
3. Products of experience gained by a company which has concentrated on designing and building dredges of all sizes and types for 75 years. This "know-how" is unequalled by any other dredge builder.
4. "DRAGONS" are completely electro-hydraulically operated with unified controls to facilitate handling ease, lessen operator fatigue and raise outputs. This kind of control was introduced by Ellicott on portable dredges over 10 years ago.
5. All precision machinery easily accessible for servicing. Eliminates costly delay in maintenance of vital operating components.
6. "DRAGONS" which comprise over half of Ellicott's total dredge production are working throughout the world on road construction, land reclamation, industrial anti-pollution and waterway maintenance programs. These are only a small sampling of the projects on which "DRAGON" versatility has been demonstrated.

For further information on the certain efficiency and the economy of "DRAGONS" and what satisfied users have said about them, send for Bulletin 980. Just fill in the handy coupon.

2755



ELLICOTT DREDGES

ELLICOTT MACHINE CORPORATION, Baltimore 30, Maryland, U.S.A.; Ellicott-Brandt, Inc., Baltimore, Maryland; Ellicott Fabricators, Inc., Baltimore, Md.; McConway & Torley Corp., Pittsburgh, Pa.; Timberland-Ellicott, Limited, Woodstock, Ontario, Canada; Dragues Ellicott France, Paris, France; Dragas Ellicott do Brasil Ltda., Rio de Janeiro, Brazil; Ellicott de Mexico, Mexico City, Mexico.

Successors to the floating dredge business of the Bucyrus-Erie Company and the American Steel Dredge Co. Complete engineering, design and construction service.

ELLICOTT MACHINE CORPORATION

1605 Bush Street • Baltimore 30, Maryland

Send me a copy of Bulletin 980, describing "DRAGONS," "The Ultimate in Portable Dredge Engineering."

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

Circle 180 on Reader Service Card

Advertisers' Literature

Listed below is free material offered in this issue's advertisements received up to Jan. 15. To get the items you want, circle appropriate numbers on the READER SERVICE CARD inside the back cover.

DRILLS—Literature provides information on Longyear drills, including Model 305 equipped with a vacuum hold-down unit.—Longyear.

Circle 353 on Reader Service Card

PAVING—A catalog explains the Jaeger spreader-finisher that spreads and makes first finishing pass in one operation.—Jaeger.

Circle 354 on Reader Service Card

VIBRATORS—Catalog 610 illustrates gasoline-operated and motor-in-head vibrators, vibrating screeds, rotary trowels, and tampers.—Stow.

Circle 355 on Reader Service Card

SHORES—Literature C-15 gives details of adjustable steel shores with stud collars that clean threads during stripping.—Acrow.

Circle 356 on Reader Service Card

CLIMBING CRANE—Literature describes the Concretor, which climbs by its own hoisting winch and has up to 100-ft radius.—B.M. Heede.

Circle 357 on Reader Service Card

TOOLS—Pullers and complete hydraulic maintenance sets available in 17½, 30, and 50-ton capacities are described in a catalog.—Owatonna.

Circle 358 on Reader Service Card

BEARINGS—A 20-p. catalog illustrates steel-backed and solid aluminum bearings for Cat engines and equipment.—Monmouth.

Circle 359 on Reader Service Card

BLASTING—Brochure supplies information about the use of N-IV ammonium nitrate and fuel oil mixture for blasting.—Spencer.

Circle 360 on Reader Service Card


LUBRICATION—The Lubriplate Data Book describes how to improve operation and reduce maintenance costs on machinery.—Fiske.

Circle 361 on Reader Service Card

PUMPING—Catalog 100 tells how Moretrench solves pumping problems and provides advice for dewatering.—Moretrench Corp.

Circle 362 on Reader Service Card

continued on page 183



Can Motorola 2-way radio cut my bills?

If you operate vehicles, you bet it can! Here's how: Drivers radio-in from their vehicles and are dispatched directly from job to job. The result: less backtracking, less "deadheading"—you get more for your money from men and vehicles—and you cut phone bills, gas and oil bills and maintenance bills.

But am I big enough for 2-way radio? Yes... even if you operate only one or two vehicles, 2-way radio saves money, mileage, time—gives you *more calls per day*—and much better service for your customers.

Can I afford it? If your drivers phone in just a few times a day, *your radio will pay for itself*. You can own or lease Motorola 2-way radio for less than \$1.00 per day per vehicle. That charge covers everything—equipment, installation and maintenance.

Can you prove it? We'll be glad to! Call in your local Motorola representative (see Yellow Pages under "Radio

Communications"). He will show you the dollars and cents proof of how Motorola can build profits for *your* business. He will give you a *demonstration of a nearby system in action*. Let him show you *why* Motorola equipment is more advanced, more reliable, more economical. Ask him about service and factory responsibility for your system. You'll see why, with the most experienced buyers—police, fire, railroads, utilities, etc., *Motorola outsells all other makes combined!*

GET THE FACTS... MAIL THIS COUPON TODAY!



Motorola Communications & Electronics, Inc.
A Subsidiary of Motorola Inc., 4501 Augusta Blvd., Chicago 31, Ill.

- ☐ MAIL ME FULL FACT KIT ON 2-WAY RADIO No. CME-12
☐ HAVE REPRESENTATIVE TELEPHONE FOR APPOINTMENT

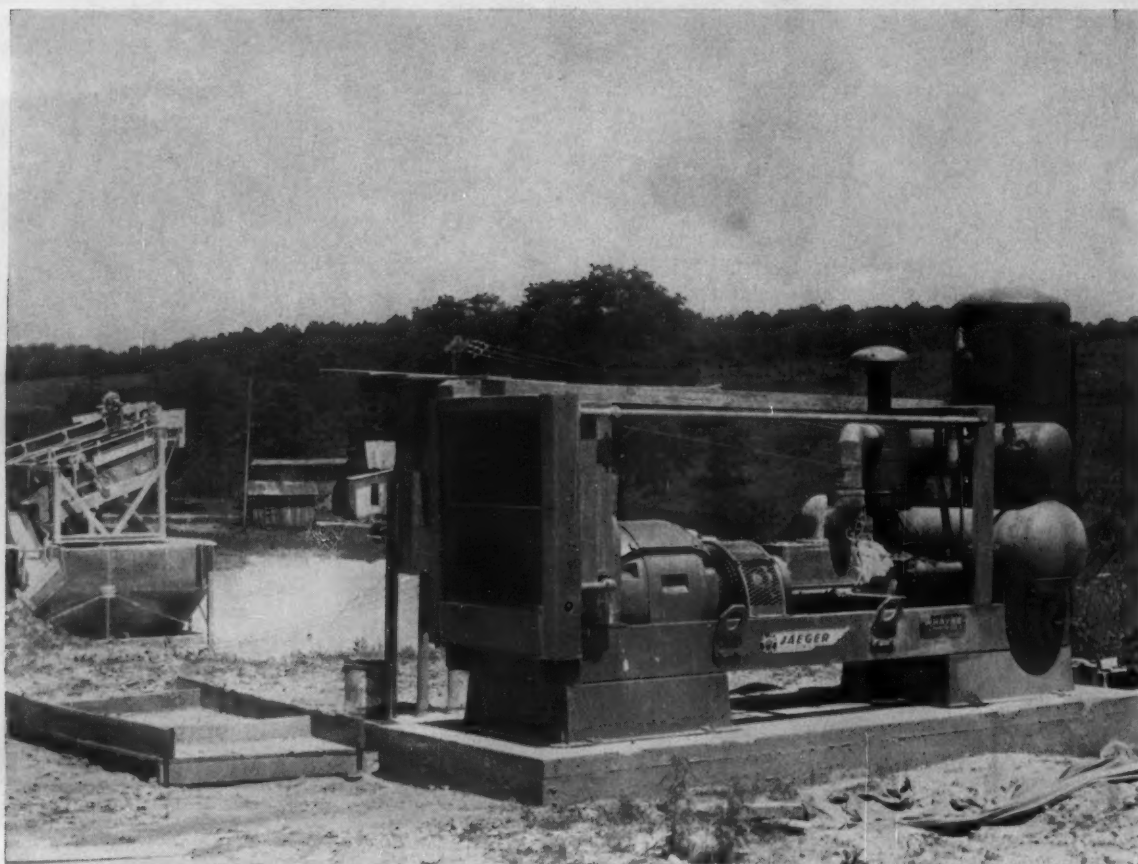
NAME _____ TITLE _____

COMPANY _____ No. VEHICLES

ADDRESS _____ PHONE _____

CITY _____ ZONE _____ STATE _____

Circle 181 on Reader Service Card



This motor-driven compressor is paying for itself with what it saves in maintenance costs. Photo taken before unit was housed.

Jaeger Announces an Advanced Electric Rotary Compressor for Construction Work

- Electric drive reduces power unit maintenance.
- Rotary design reduces compressor maintenance.
- Vibration freedom eliminates heavy foundations.
- Oil-and-air cooling eliminates water lines.
- High efficiency produces 625 cfm at 1770 rpm, ample for biggest drill. Smaller units comparably efficient.



Portable mountings with housing if desired.

The 2-stage sliding-vane type rotary compressor runs as smoothly as its electric motor. Air delivery is continuous, without intermittency or pulsation. There are no valves or pistons. It weighs 30% less than reciprocating compressors and delivers 100° cooler air.

Available with or without motor, in 30, 60, 100, 150 hp models of 130, 260, 380 and 625 cfm air capacity, 100 psi pressure. For specifications and prices, call your Jaeger distributor or write for additional information.

JAEGER DESIGN PROVED IN THOUSANDS OF COMPRESSORS IN THE FIELD

In continuous all-weather operation, by many large users, Jaeger Roto Air Plus compressors are notable for efficiency in producing air with low power consumption and minimum cost of maintenance. Because wear on rotor vanes is automatically compensated for by centrifugal force, efficiency never varies. Air-cooled oil removes the heat of compression and lubricates so efficiently that 8000 hours without a single vane replacement is not unusual.

THE JAEGER MACHINE COMPANY

800 Dublin Avenue, Columbus 16, Ohio

Jaeger Machine Company of Canada, Ltd., St. Thomas, Ontario
Worldwide sales and service through Jaeger International Corp.,
Apartado 137, Panama, R. P.

Circle 182 on Reader Service Card

AD LITERATURE . . .

Listed below is free material offered in this issue's advertisements received up to Jan. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

ENGINES—Bulletin S-225 describes LP gas-burning Wisconsin engines, ranging from 3 to 56 hp, that power indoor equipment.—Wisconsin.

Circle 363 on Reader Service Card

PIPE COUPLINGS—Bulletin 59 describes Wedgelock couplings, which require only a hammer to connect, pipe, and fittings.—Naylor.

Circle 364 on Reader Service Card

TAMPER — Here's data about the Triplex, a one-man tamper that does the work of five men with single tampers.—Ingersoll-Rand.

Circle 365 on Reader Service Card

DIESEL ENGINES—Literature is provided on small air-cooled and water-cooled models of Yanmar engines made in Japan.—Continental.

Circle 366 on Reader Service Card

PUMPS — The complete range of Marlow self-priming and diaphragm pumps are displayed in Bulletin C-09.—Marlow.

Circle 367 on Reader Service Card

DRILL—Bulletin SP-3287 describes the G-900 Tracdrill, which can drill alongside tracks with 180-deg full swing.—Chicago Pneumatic.

Circle 368 on Reader Service Card

TRACTOR SHOVEL—Here's information on the Model H-120 Payloader, a tractor-shovel powered by a 300-hp diesel engine.—Hough.

Circle 369 on Reader Service Card

TRACTOR—Literature describes the rubber-tired, 55,000-lb D-120 Paydozer, which can be used for dozing, push-loading, towing.—Hough.

Circle 370 on Reader Service Card

CONCRETING — Catalog GA30 describes Model G-4A, a pneumatic concrete machine for gunning, conveying, grouting.—True Gun-All.

Circle 371 on Reader Service Card

DREDGES—Bulletin 980 illustrates the Dragon portable dredge with a hull that can be assembled on shore or in water.—Ellicott.

Circle 372 on Reader Service Card



LPG is safe, clean, economical, and extends engine life. Grinder is made by Terrazzo Machine & Supply Co., Minneapolis, Minn., and is powered by an LPG-burning vertical-shaft Wisconsin.

cost less to use — and they're safer indoors WISCONSIN LPG ENGINES

If you operate indoors, you gain both safety and savings when you select equipment powered by LPG-burning air-cooled Wisconsin Engines.

You can save up to 15% on gas consumption alone. And because of the sealed fuel system, none is wasted — and none is lost through evaporation, spilling, or pilferage. Also, LPG combustion greatly reduces the percentage of dangerous carbon monoxide gas.

LPG burns clean. This leaves your engine free of gum, lead, and carbon deposits on pistons, rings, valves, guides, and spark plugs. Your engine lasts longer — and requires much less upkeep.

When buying power equipment for indoor use, specify it with LPG-burning Wisconsin Engines, 3 to 56 hp. Or you can convert your existing Wisconsin with easy-to-install LPG kits. Get Bulletin S-225. Write Dept. C-31.



WISCONSIN MOTOR CORPORATION

MILWAUKEE 46, WISCONSIN

World's Largest Builders of
Heavy-Duty Air-Cooled Engines

Circle 183 on Reader Service Card

BEST

for gunning...

model
G-4A

for batching on the
job or use a wet
or dry transit mix

Write for catalog
No. GA30



TRUE GUN-ALL

places 10 cubic
yards of concrete
per hour...

...conveying...grouting

The True Gun-All G-4A is a versatile, all-purpose pneumatic concrete machine that does all jobs well. Economically, too, because of its high production of REAL concrete containing up to ¾ inch aggregate. Needs only 365 cfm compressor. (Smaller models available)

a division of
DETROIT TOOL ENGINEERING CO.

P. O. Box 232/Lebanon, Missouri

Circle 206 on Reader Service Card



MAYO Tunnel Cars

... feature practical designs and rugged construction. All cars can be equipped with Mayo's safe, automatic couplers.

- Side Dump Car (shown) has 2½ cu. yd. capacity, 24" gage.
- Rocker Dump Car. Ideal for sticky muck or wet concrete. 1 cu. yd. capacity 24" gage.
- Tunnel Car. Box body is removable and may be hoisted to surface to be dumped into truck. ½ to 2 cu. yd. capacity, 18" or 24" gage.

FREE Bulletin No. 18-b shows car details; No. 22 illustrates Automatic Coupler.



MAYO
TUNNEL AND MINE
EQUIPMENT
LANCASTER, PENNA.

Circle 184 on Reader Service Card

SPEEDY DELIVERY OF ECONOMY FORMS



30 offices and 8 warehouses throughout the nation, assure prompt service and speedy delivery anywhere in the U. S. Save time, materials, money, by renting Economy Steel Forms for concrete construction. Supplied with supervisory service—form erection drawings.

ECONOMY FORMS CORP.



**MAIL
TODAY**

Economy Forms Corp.
Box 128-N, N.P. Station
Des Moines, Iowa

Please send catalog on Economy Steel Forms, and address of nearest sales office.

Name

Firm Name

Address

City State

Circle 207 on Reader Service Card

AD LITERATURE . . .

Listed below is free material offered in this issue's advertisements received up to Jan. 15. To get the items you want, circle appropriate numbers on the SERVICE CARD inside the back cover.

FORMS—Information about EFCO steel forms and the addresses of 30 offices and 8 warehouses are provided in a catalog.—Economy.

Circle 373 on Reader Service Card

SHORING—Bulletin 112A describes heavy-duty frame shoring in three frame sizes that carry up to 20,000 lb per frame.—Safeway.

Circle 374 on Reader Service Card

BUILDINGS—The new line of Armco steel buildings that includes a choice of roof design is presented in the Building Catalog.—Armco.

Circle 375 on Reader Service Card

LUBRICATION—Catalog supplies data on portable lubers that provide fast greasing, oiling, and air service in the field.—Graco.

Circle 376 on Reader Service Card

DRILL—Spec sheet AT-147 describes the LRD-3 truck or crawler-mounted rig that handles rotary or down-the-hole drilling.—Le Roi.

Circle 377 on Reader Service Card

RADIO—A brochure details the Messenger two-way radio with 23-channel coverage and crystals for one channel.—Johnson.

Circle 378 on Reader Service Card

CRANE—Case History 129 tells how a 2½-yd P&H shovel hauled and dumped fill for Oregon's Siuslaw River bridge.—Harnischfeger.

Circle 379 on Reader Service Card

BRACING—Bulletin AB-1 describes the Adjusta-Brace, which provides swivel adjustment in any direction at any angle.—Superior.

Circle 380 on Reader Service Card

END BITS—The End Bit Buyer's Guide describes the new Amsco bits made from specially treated steels.—American Brake Shoe.

Circle 381 on Reader Service Card

HOISTS—Bulletin 34 explains Clyde hoists with all steel beds and side frames, ranging in line pull from 3,000 to 80,000 lb.—Clyde.

Circle 382 on Reader Service Card

CRANE-EXCAVATOR—A catalog depicts the Compact 250, which operates as a backhoe, dragline, clamshell, shovel, or crane.—Bantam.

Circle 383 on Reader Service Card

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT BUSINESS
EQUIPMENT USED OR RESALE
OPPORTUNITIES

DISPLAYED RATE

The advertising rate is \$21.75 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

Employment Opportunities \$87.00 per inch, subject to agency commission.

An advertising inch is measured ⅞" vertically on one column, 3 columns—30 inches—to a page.

UNDISPLAYED RATE

\$2.10 a line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Positions not displayed advertising rate is one-half of above rate, payable in advance.

SAVE ON YOUR CHAINS ROLLERS SPROCKETS IDLERS, ETC.

TRACK

for Caterpillar—
International—Allis Chalmers
BRAND NEW—GUARANTEED
SEABOARD EQUIPMENT CO., INC.
181-88 Jamaica Ave.
Jamaica 32, N. Y.
AX 7-6425

Circle 208 on Reader Service Card

ADDRESS BOX NO. REPLIES TO:
Box No. Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 11: 255 California St.

POSITIONS VACANT

Construction Superintendent—Heavy experience all types trench excavation, sheeting, shoring and dewatering for utility contractor New York Metropolitan Area. Man we are looking for must be able to handle personnel and administration and know how to plan and organize as well as direct work in field. Profit sharing incentive. Your letter should give enough facts to warrant interview. P-5984, Construction Methods and Equipment.

OFFICIAL PROPOSALS

Bids: March 7, 1961

**Monona Terrace Civic Center and Auditorium
Madison, Wisconsin**

Plans for bidding will be available about January 21, 1961. The Project will include:

- Parking structure for 900 cars.
- Exhibition Hall—40,000 sq. ft.
- Meeting Rooms—17,000 sq. ft.
- Theater—2,300 seats.
- Theater—450 seats.
- Community Center—30,000 sq. ft.
- Art Gallery—12,000 sq. ft.

Designer: Frank Lloyd Wright, Architect, William Wesley Peters.
Bids to be opened approximately March 7, 1961.

Bidders' qualifications and proof of responsibility must be filed by February 24, 1961, on forms available from Ray Burt, Building Commissioner, City of Madison, Wisconsin.

Plans will be available for inspection at F. W. Dodge Offices in Madison, Milwaukee, and Chicago.
Copies of contract documents may be obtained from Ray Burt, Building Commissioner, City-County Building, Madison, Wisconsin.

CONSTRUCTION METHODS



HOUSTON SHELL & CONCRETE hauls heavy loads of ready-mix concrete the economical way—with a fleet of Macks. This B-60, on duty at the Port of Houston, prepares to pour concrete into bucket, which will then be lowered into construction site by dragline.



To meet precise pouring schedules,

Houston Shell & Concrete relies on MACKS

In the Houston industrial and seaport area, Houston Shell & Concrete handles both large and small ready-mix concrete deliveries to widely scattered job sites. To do this most efficiently—to get the loads in and the trucks out on schedule—the company relies on Macks.

The result has been minimum truck downtime, rock-bottom operating and maintenance costs. On the job, dependable Macks maintain mixer schedules without costly interruption. No matter

how sticky the terrain, Mack Balanced Bogies with Power Dividers have produced the sure-footed traction that keeps trucks moving.

This is the kind of performance you can count on from Macks. There's a Mack to haul your load more economically and more efficiently. With the trend toward maximum efficiency from every piece of hauling equipment, can you afford to be without Macks? For more evidence of their on-the-job superiority, call your Mack

branch or distributor. He'll be glad to give you the names of satisfied users in your area. They'll tell you about Macks. Mack Trucks, Inc., Plainfield, New Jersey. Mack Trucks of Canada, Ltd., Toronto, Ontario.

7919

MACK
FIRST NAME FOR
TRUCKS

Circle 185 on Reader Service Card



Illustrated Catalog of Bearings for Caterpillar Engines

Now, Monmouth offers you a complete line of solid aluminum and steel-backed aluminum bearings for Caterpillar engines and equipment. Identical to the original design, both connecting rod and main bearings are available for all makes and models.

Fully illustrated, this 20-page catalog helps you select the right bearing quickly—assures you of the highest duty material available. And you get more

crankshaft regrinds with the complete range of undersizes available, for popular models.

Ask your nearest NAPA jobber for your copy—and rely on him for complete stock and immediate service.

MONMOUTH Engine Bearings

CLEVITE SERVICE: Cleveland Graphite Bronze • Division of Clevite Corporation • Cleveland 3, Ohio



Circle 186 on Reader Service Card

Maintenance Shop...

Simple Test in Shop Checks Performance Of Repaired Pumps

MAINTENANCE MEN WHO work on centrifugal pumps can build a simple test installation in their shops for checking the performance of repaired units. All they need is about 60 ft of pipe and a supply of water.

Such a test setup was designed and built by C. W. Blakeslee & Sons, Inc., a New Haven, Conn., contractor. The company's superintendent of equipment, Roland Spencer, wanted to be sure that any pump repaired by his mechanics would work properly when put into operation at a job site.

Checking a pump's suction is the simplest way to get an indication of its performance. Mechanics who work on pumps usually try them out by pumping water out of a barrel at ground level. This is a good indication of whether a pump works, but it gives the mechanic no idea of how it will perform when pumping against lifts of 20 ft or more.

That's where Blakeslee's pump tester comes in. The setup includes enough pipe to develop suction equivalent to a lift of about 30 ft. Under ideal conditions at sea level, a pump should be able to lift water to a height of about 34 ft, but for practical purposes a 30-ft height is a sufficient indication of a pump's performance.

The test installation is very simple. Located near one wall of a repair shop, it takes up only a few square feet of floor space. Below the floor is a 5-ft-deep pit that serves as a water reservoir. It is covered with a steel grating and plywood.

Two vertical pipes, 1½ in. and 4 in. in dia, extend from the pit to about 25 ft above the shop floor. At the top, the pipes are fitted with two 90-deg elbows, and return pipes extend from the elbows almost to the floor. The

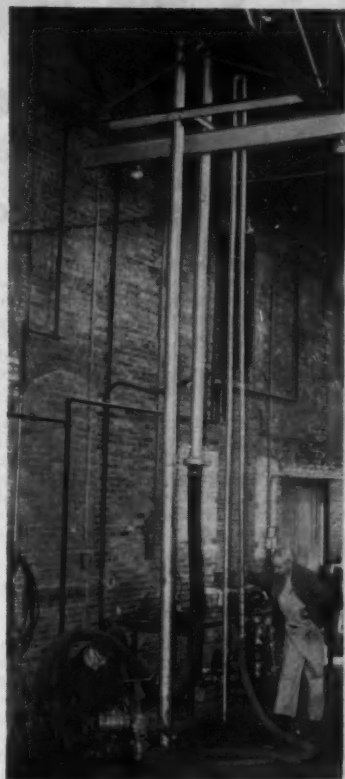
ends of the pipes are fitted with flexible hoses for connection to pumps. The smaller pipe is used for testing 1½ and 2-in. pumps, and the larger pipe handles tests on 4, 6, and 8-in. pumps.

The testing procedure also is simple. A pump is placed on the floor near the pipes, and the hose is connected to the pump's discharge. Then the engine is started and allowed to run at its governed speed. The pump should develop enough suction to lift water from the pit to the top of the 25-ft-high pipe. As soon as the pump starts discharging water, the test is completed.

An additional performance indicator on the 1½-in. test pipe is a gage that registers up to 30 in. of vacuum. The gage is installed just above the end of the return pipe. If a pump fails to discharge water during a test, the gage is read to get an idea of the maximum suction developed by the pump. The approximation is based on the fact that 30 in. of vacuum are roughly equal to a 30-ft lift height for water.

These tests are handy for spotting pumps that appear to operate properly but that fail to lift water out of deep pits or excavations. These failures usually are caused by defective seals, improper packing, or some other internal mechanical difficulty. The tests also are Roland Spencer's proof that a pump has been repaired properly, and that any malfunctioning in the field is not the fault of the pump.

The tests also can be used to check the performance of new pumps. Blakeslee recently purchased two new centrifugal units and put them through tests before shipping them to the field. It turned out that neither of the pumps developed enough suction, and they were returned promptly to the dealer.



SIMPLE TEST SETUP—Two pipes, 1½ and 4 in. in dia, rise to a height of about 25 ft above a 5-ft-deep pit containing water.

PUMP CONNECTION—Flexible hose at the end of the return portion of a vertical pipe connects to the pump for testing.



ALPHA

BETTER CONSTRUCTION THROUGH
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news and notes from the field

Tips On Building Watertight Concrete Structures

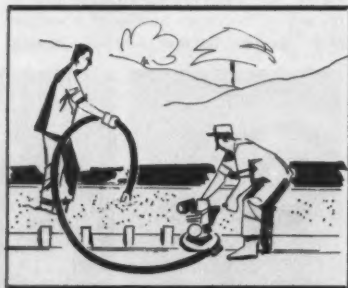
The increasing use of concrete for swimming pools, basement playrooms, industrial sub-surface garages and similar structures continues to reflect the growing interest in watertight concrete. Moreover, of the many questions asked Alpha Field Engineers, those about watertight concrete today are one of the most common.

Watertight concrete can be produced without undue difficulty when proper emphasis is placed on good design, good concrete and good workmanship. Extensive testing and careful examination have revealed that the most common reasons for leaky concrete are **inferior workmanship, poor materials and too lean a mix.**

Good Concrete:

Modern ready mix concrete plants today are equipped to furnish concrete of the very highest quality, but the user must specify the mix and make sure the concrete is not ruined on the job by someone insisting on additional water. The most modern mixing plant, the best materials and the best mix design mean nothing when the water content is not controlled and the concrete is improperly placed and cured.

The Right Mix:



Use a quality concrete mix and place it in even layers not more than 18 in. deep. Avoid honeycombing by adequately spading or vibrating each layer.

Experience has indicated that for such structures as tanks and reservoirs the concrete should contain not more than 6 gal. of water per sack of cement. For concrete in very heavy sections such as dams, the water may be increased to 7½ gal., while for thin sections it should be reduced to 5 gal. These amounts include the water which is introduced as surface moisture in the aggregate. Coarse aggregate usually contains little if any moisture, but the sand often contains a considerable amount of water.

Avoid Segregation in Placing Concrete:



Concrete should be delivered at a number of points around the form to avoid chuting over long distances. This prevents segregation, a source of possible leaks.

Of all the steps in watertight concrete work, handling, placing and compacting in the forms are among the most important. Concrete should not be allowed to drop freely more than 5 or 6 feet, as segregation is likely to occur if it falls through a greater distance. Flat chutes should not be used even for short distances. Chutes should be deep with rounded bottoms, and constructed of or lined with metal. Buggies should be operated on smooth runways. Buggies equipped with pneumatic tires reduce segregation. Dumping a large quantity of concrete in one place and then causing it to flow horizontally over a long distance in the form is not good practice and should never be done. Concrete should be distributed by placing in uniform layers 1 foot to 18 inches thick, spading or vibrating each layer to consolidate the concrete.

Construction Joints:

One of the frequent sources of difficulty has been at construction joints. Wherever possible, the work should be so planned that placing of concrete will be continuous. In large structures expansion joints are sometimes provided, but placing should be continuous between joints. Where a construction joint must be made, precautions should be taken to secure good bond between the layers. If the structure

is to be subjected to water pressure such as in a tank and if a construction joint is to be made between hardened and fresh concrete, a waterstop should be installed.

Curing:

Keeping the concrete wet for at least 7 days when normal portland cement is used, or 3 days if high-early strength portland cement is used, should be required on all watertight construction.

Surface coatings are helpful in overcoming leakage on some structures, but cannot be expected to overcome faulty joints or defective areas. An effective surface treat-



Use whitewash-size brush to apply surface coating.

ment is the application of a grout of equal parts portland cement and fine sand mixed to the consistency of paint and applied with brushes. The concrete should be damp when this is applied and the coating should be dampened as soon as the cement has set sufficiently so that it will not be washed off. It should be kept damp at least 24 hours.

More Information

Your Alpha Field Engineer can answer your questions on watertight concrete construction and help with any other problems involving the use of Alpha cement. Reprints of this advertisement are yours for the asking.

ALPHA

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Alpha Building, Easton, Pa.

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Methods Memo...

A New Idea in Asphalt Mixing

A Swiss engineer has developed a new system for mixing mineral aggregate and liquified bituminous binder. Invented and patented by Dr. Albert Sommer, the process involves spraying aggregate particles held in suspension with bituminous material.

Fast rotating blades of a pug mill toss aggregate particles upward into a floating blanket of atomized bituminous material shot from pressure nozzles. The impact of the spray coats individual particles thoroughly and evenly.

A complete fill, mix and discharge cycle takes only 50 sec. Mixing time is equal to spraying time, usually 15 to 25 sec. A few simple alterations will adapt conventional weigh-batch or continuous-mix asphalt plants to the system, the inventor claims.

Are the Russians Opening Another Gap?

The Russians seem to be pushing concrete research almost as energetically as space exploration—and they may be getting ahead of us in this field, too.

Not long ago, a Russian scientist developed a process that uses rolling mills to produce concrete that has the strength and elasticity of cast iron. Now, Soviet researchers have come up with a plasto-concrete that they claim is stronger than steel.

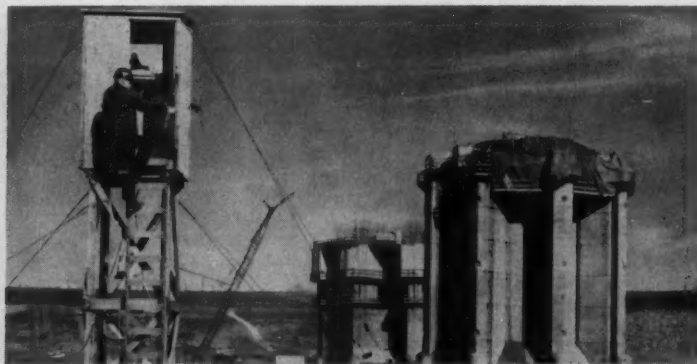
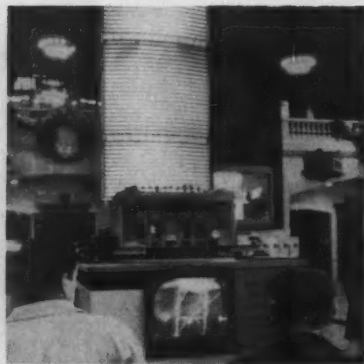
A hydrolysis product of cotton bolls replaces cement and creates a material with compressive, tensile and bending strengths that are said to greatly exceed those of conventional concrete. And it is highly resistant to fire, water and acid.

Adhesion with metal of the new concrete is so strong that in reinforced samples subjected to tensile tests the reinforcing steel broke without disturbing the bond of the plasto-concrete. Specimens of the material reinforced with bamboo and fiber glass also stood up well under tests, the Russians claim.

Year's Delay Isn't the Contractor's Fault

Only the upper level of a double-deck bridge across the Ohio between Louisville, Ky., and New Albany, Ind., will be completed in time for the scheduled opening of the bridge this summer. But the contractor will not be held responsible for the delay.

The Indiana Highway Dept. admits that a clerical error in its advertisement for bids listed September, 1962, as the completion date for the Indiana approaches. Actually, the completion date was supposed to be September, 1961. The contractor will rearrange the work schedule to make possible the punctual opening of the upper deck and the early completion of the lower deck.



Cameras Follow Progress on Two Big Projects

Both the layman and the construction stiff will be well informed about two major construction projects, thanks to continual surveillance by cameras.

Passersby in the main concourse of New York City's Grand Central Terminal can watch construction progress on the Pan Am Building next door without any of the inconvenience usually associated with sidewalk-superintending.

Four 21-in. television receivers set into the base of a model of the new structure give a daily audience of 500,000 persons a dramatic view of construction crews in action. Diesel Construction Co. is putting up the structure on a 3½-acre site immediately adjacent to the railroad station. It will be the world's largest office building.

At Oahe Dam, a half-million photographs taken at 5-min intervals round the clock are recording the construction of seven intake superstructures. Western-Knapp Engineering Co. of San Francisco, the contractor, will use the photos for advertising and for technical films to be used by colleges and construction trades.

The camera, a Bell and Howell Model 240 Magic Eye, is housed in a small elevated wooden structure. It can be raised or lowered and swiveled from side to side to take shots at various angles. A Multipace time lapse control actuates the camera. The unit has been in operation since April, 1960, and will have nearly 2 yr of picture-taking behind it by the time the job is completed.

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PRESTRESSED CONCRETE... 50¢

R5 A 20-page special report dealing with stressing applications; commercial products; a booklet for contractors; pre-tensioning beams and prestress products.

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R6 A 36-page booklet in which 15 service companies discuss proper maintenance of crawler tractor rollers, compressors, trenchers, crushers, asphalt plants, loaders, air tools, pavers, and tractors.

HOW TO IMPROVE CONTRACTOR-LABOR RELATIONS

R7 An 8-page booklet dealing with the steps that contractors can take to improve labor relations, what they can do and can do, and hints for job success and moving.

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R8 A 12-page booklet by a construction expert explains the importance of a sound insurance program, how to strengthen liability coverage...how to protect your property. Included is a checklist for contractors.

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Chart covers 9 manufacturers and 45 models of tractors with horsepower ratings from 30 to 425. Other data includes dimensions, speeds, engine description, and drawbar pull.

PELLED SCRAPERS ...10¢

Chart covers capacities of the 44 models listed on this chart range from 5 to 45 cu yd. Information on the prime mover includes data on engine, transmission, and operating speeds. Other data gives over-all dimensions and weight distribution. Chart covers 11 manufacturers.

UNDRAWN SCRAPERS ...10¢

Chart gives overall dimensions and general data including weight distribution and type of controls for scrapers with truck capacities from 2½ to 54 cu yd. built by 9 manufacturers.

ROLLERS ...10¢

Chart covers tandem and three-wheel rollers with a dry weight of at least 6,000 lb are listed in this chart covering 12 manufacturers and 78 models. Data covers power trains, over-all and roll dimensions, weights, and construction.

PNEUMATIC-TIRED ROLLERS ...10¢

R15 Compaction figures for 35 models of rollers are given in this chart covering 12 manufacturers. Other information covers weights, overall dimensions, wheels, and power train.

MOTOR GRADERS ...10¢

R16 Information on weights, dimensions, engines, and travel speeds in this chart covers 59 models of graders built by 7 manufacturers. Also included are data on blades and blade controls and scarifiers. Each 10¢

PORTABLE COMPRESSORS ...10¢

R17 List includes 19 manufacturers with 48 models of rotary and reciprocating portable compressors delivering 100 cfm at 100 psi or more. Information includes dimensions and mechanical data on compressors and engines.

TRACTOR SHOVELS ...10¢

R18 Integrally built tractor shovels are available in 93 models by 18 manufacturers. Chart includes both crawler and wheel-mounted units with bucket capacities ranging from ½ to 6 cu yd. Other information covers engines and power trains, maximum speeds, and over-all dimensions.

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Special report from
Channel Constructors

•
**LOCATION: Niagara
Falls Power Project**

•
**OPERATING
CONDITIONS:
Rock-Lockport
Dolomite**

Reports from the Niagara Power Project prove again that Timken® carbide insert bits give the most economical service. Timken bits were used in drilling the 500 ft. wide, 100 ft. deep cut shown at the right. Channel Constructors chose Timken carbide insert bits because of their consistent performance on the rock drilling phase of this project. Users of Timken bits everywhere report such savings — more feet-per-bit, longer bit life, fewer lost holes.



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Your most economical bit for hard, abrasive ground is the Timken carbide insert bit. In softer ground, use the low-cost Timken all-steel multi-use bit. Because both bits are interchangeable in the same thread series you can switch bits when the ground changes. Dozens of different Timken bits fit the same drill steel. Both types are made from Timken electric furnace fine alloy steel, have special shoulder unions that protect threads against drilling impact. Let us help you select the Timken bit that will do the most economical job for you. The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steel and Removable Rock Bits.*

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